Mr Fox

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EDUCATIONAL RESEARCH

A Review for
Teachers and all concerned with
Progress in Education

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The Education of Exceptional Children—III

EDUCATION OF THE DEAF

by A. W. G. Ewing

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RAPID developments in the type of provision made for children handicapped by deafness are today in progress. Some involve experiments in education, most implement in some way results of research. All are of direct concern to medical authorities, administrators, educationists and psychologists. Many have implications of significance extending far outside the field of education of the deaf.

For ten years or so, after 1946, in England and, to varying degrees, in other countries, the main alternative forms of special school placement for children with defective hearing were: (*a*) schools for the deaf—for " children with no naturally acquired speech "; (*b*) schools for the partially deaf—for " children with naturally acquired speech "; and in a small minority of cases (*c*) schools for " deaf children with additional handicaps." The London County Council established units for partially deaf children attached to primary day schools and the Lancashire County Council appointed peripatetic teachers of the partially deaf. These two authorities apart, the trend in England was to open new residential schools—for the deaf and also for the partially deaf.

Today, with much greater diversification well under way, a reappraisal of our basic knowledge about the problems involved is long overdue. This article cannot claim to be comprehensive but it is an attempt to present some of the salient facts.

Provision for Partially Deaf Children in Ordinary Schools

First, for administrators especially, is the question of the number of children involved, how to find them and how to classify them. There is evidence of a growing and international tendency to recognise and classify as needing special treatment two categories of auditorily impaired children for whom no general provision has hitherto been made and have rarely been included in official returns. One consists of pupils in ordinary schools, who are not considered to need full-time special schooling, but are now being found, on investigation, to have both social and educational problems, the other of very young children whose hearing is defective.

Rojskjaer has reported progress in Denmark towards organising " comprehensive audiological work for the benefit of the *whole* population as such." In 1958, there were 600,000 children in Denmark aged under seven years and 550,000 children aged seven to fourteen years. Of these, 1,690 children were " under audiological treatment." There were 500 children, aged seven to fourteen years, in attendance at State schools for deaf and severely hard of hearing, and 865 attending ordinary schools, of whom 745 had hearing aids. Under seven years, were 325 children, 275 with hearing aids, including 20 children under two years old. It will be noted that the number of children with

hearing aids in ordinary schools much exceeded the number of pupils in special schools for the deaf and hard-of-hearing.

To obtain somewhat similar information about the present situation in the United Kingdom, we have asked the School Medical Officers of large and small county and county borough authorities for information under six heads. They co-operated very willingly and the following provisional table is a result:

TABLE I

Children with Impaired Hearing

(Total school population, approximately 2,500,000)

Type of Placement	*Number per thousand Children*
Schools for the Deaf	0.5
Schools for the Partially Deaf	0.27
Special classes attached to primary schools	(total approximately 240 children)
Ordinary Schools, with hearing aids	0.5
Ordinary schools, with significant impairment of hearing, no hearing aids	2.0
Number of peripatetic teachers of partially deaf children in ordinary schools	19

(NOTE : This table is based on part of the data that are at present being studied by Mr. J. C. Johnson, Nuffield Research Fellow, Department of Education of the Deaf, University of Manchester, who is completing a full-time investigation of the problems of children with impaired hearing in attendance at ordinary schools.)

A significant feature of the data upon which this table is based is that two large authorities, both with their own schools for the partially deaf, have in addition as many as 0.72 and 0.58 per thousand of their ordinary school population equipped with hearing aids. One of the areas involved is heavily industrialised and the other part-urban and part-rural. A survey of children with defective hearing in Cheshire is being made by members of the staffs of the Department of Education of the Deaf and the Department of Otolaryngology, University of Manchester, and the School Medical Officer for Cheshire and his staff. It seems likely to indicate that the number of children in ordinary schools with psychological and educational problems due to partial deafness equals that of children with defective hearing in special schools. To meet the needs of children in this category local authorities in England and Wales have appointed some twenty or thirty peripatetic teachers, many of them recently. In Denmark there are about 100 of these teachers.

In the United States of America the total number of children quoted in the annual returns published in *American Annals of the Deaf*, as receiving special education because they were deaf or hard-of-hearing, was 18,316 in 1947, and 25,155 in 1959. In the latter year, 5,964 children were stated to be attending special public day classes, a type of provision that was not mentioned in 1947.

These developments inevitably prompt questions. Just how comprehensive is our ascertainment and treatment of defects of hearing among children, either from the medical or from the social and educational angle? What has organised research to tell us, so far, about the suitability and potential efficiency of different types of schooling for different categories of auditorily-handicapped children? More fundamentally, what knowledge have we of the actual composition of those sections of the child population to which the terms deaf, partially-deaf or hard-of-hearing are generally applied? It will not be inapt to quote Kerr Love, one of the earliest British medical consultants to make systematic studies of pupils in an institution for the deaf. He wrote that their one common characteristic was inability to benefit from attendance at ordinary schools.

Provision for Very Young Deaf Children

Before seeking answers to our questions we must take account of growing provision for the detection of deafness in infancy and early childhood and for the early training of very young children whose hearing is defective. Pioneered, in England, by the late Lady Ewing, partly as a result of her earlier experience in charge of a new special school for young deaf children, this work is now regarded, internationally, as of key importance in the education of the deaf. It is principally carried on by means of audiology and parent-guidance clinics in universities, hospitals, public health departments and schools. In 1958, Owrid, administering his Language Scale for Deaf Children to 500 pupils in schools for the deaf, found that those who had had home training (some of them from before the age of one year) were significantly superior to other pupils in linguistic development. More recently, Beaman, at Manchester, made periodic sound-recordings of the vocalisation and early speech of 60 children of pre-school age, who were having home-training, with hearing aids, by their parents under her guidance. The children were assigned to three sub-groups according to degree of deafness, and the recordings were transcribed and analysed. Beaman found that some of the severely deaf children became able to perceive the sound-patterns of speech on the basis of hearing alone. They learned to talk. Other less handicapped children, after a period of training acquired, spontaneously, a range of vowel and consonant phonemes and frequency of utterance that can be considered to come within normal limits. Certain children, in both these groups, were demonstrated by Beaman at the International Congress on the Modern Educational Treatment of Deafness, held at Manchester University in 1958. For example, M., aged 5 years 10 months, with hearing losses 35-70 decibels, and T., aged 6 years 6 months, with hearing losses 30-55 decibels, were seen and heard by the audience conversing freely and fluently together about topics of mutual interest. Both were reported to be managing without undue strain in an ordinary class, in an ordinary school. J., a profoundly deaf child, aged 3 years 6 months, used her voice well and spoke intelligibly, depending greatly on combining the use of a hearing aid with lipreading. Of Beaman's group of 60 home-trained children, seven are now in ordinary schools and eight in schools or units for the partially deaf. Most of the rest are in schools for the deaf and the parents of some are continuing to have guidance about their home training. Huizing, Professor of Audiology at Groningen University, has reported similar cases.

These results support certain earlier findings from studies of more than 240 children, by Ewing, Watson and Pickles (using developmental schedules to assess progress),

at Manchester, and by Whetnall and Galbraith in London. Clinical observations and sound-recordings have long shown that an appreciable proportion of home-trained children with hearing impairments become able to talk colloquially rather than in the more formal kind of language that pupils tend to develop in schools for the deaf. Spectographic analysis, which reveals the time-pattern and frequency-intensity patterns of speech, when recorded, confirm the greater normality of their phrase and sentence forms.

Wedenberg, making experimental studies of the response to auditory training initiated at the age of three years, of 36 severely deaf children, found a relationship between the amount of advantage that children obtained from using a hearing aid and the pattern of their audiograms, i.e. the frequency-intensity characteristics of their deafness. He noted also differences in the quality of their voices and the intelligibility of their speech. Of 20 pupils who had reached school age, when Wedenberg wrote his article, three were attending ordinary schools, five public classes for the hard-of-hearing, four schools for the hard-of-hearing, seven schools for the deaf, and one a public school class for retarded children.

As a result of tests and psychological examinations of 370 deaf and 370 ordinary children, aged 18 to 65 months, Kendall at Manchester concluded that the handicap of deafness involves and threatens social and emotional development no less than linguistic and intellectual development. He noted " The mental health of deaf children of pre-school age . . . can only be assured if adequate attention is paid to their needs during this important developmental period. Predominantly and over-ridingly, deaf children need to be given an effective means of communication with other people in their environment." Since Kendall wrote these words repeated clinical observations of the results of the use of hearing aids with very young children have shown that those with whom their parents and others succeed in establishing contact through hearing, or to an appreciable extent by means of it, usually exhibit more normal patterns of social development, of play behaviour and indeed of general mental growth than those with whom parents can make contact only through vision and touch and who spend their earliest years without meaningful experience of human voices and speech. Taylor has analysed some of the factors involved. It is more difficult for parents of young children who are sub-totally or totally deaf to establish and maintain an equally close relationship with them, without the dynamic factor of communication through sound. Nevertheless, some parents achieve it.

Reporting, in 1953, on studies at John Hopkins University, Baltimore, of the hearing for speech of 572 children aged four months to five years (of whom 456 proved to have impaired hearing), Pauls and Hardy wrote, " Treatment and training should be begun as early as possible in the child's life. The period from eighteen to thirty months seems best. The child between the ages of two and five years is at his peak as a language-learning individual; never again will he exhibit such a state of readiness, need and desire for the acquisition of speech and language. So far as the tools of communication are concerned, the child's career does not begin at school, but in infancy."

Detection of Deafness in Infancy and Early Childhood

The urgent importance of detecting deafness in what are normally the pre-school years is now widely admitted by many public authorities in the United Kingdom, the

United States, Denmark and other countries. It is accepted that very young deaf children, (*a*) should have the opportunity of effective and continuous auditory experience, and (*b*) should have training from as early an age as their deafness can be detected.

It has been found that special procedures have to be applied to test hearing in babies and young children. We have reported elsewhere that medical investigation of the histories of pupils in schools for the deaf, in England, showed that 70 to 80 per cent. had their disability from before the age of two years. Best, in America, estimated that the impairment occurs before five years " in over 90 per cent. of the deaf group." In 1958, Harrison stated that of 354 cases of deafness in childhood studied by our joint team at Manchester, 261 were cases of perceptive deafness, which often is unassociated with pathological changes in the middle ear. Perceptive deafness is frequently detectable only by means of tests of hearing. In the absence of such tests ascertainment of deafness in young children is often delayed for several years.

There are two main approaches, in practice, to this problem. The first is to provide short courses of training for medical officers and health visitors in screening tests of hearing that are developmentally based and applicable in infancy and early childhood, such as those evolved in 1942 by Ewing and Ewing. As far as possible, all children in selected age groups, especially those aged nine to eleven months, who come under the care of the maternity and child welfare staffs, are tested. Also the attention of general practitioners is drawn to the availability of trained workers who can make the tests in health centres or in children's homes. The Medical Officer of Health for the City of Manchester reported that, in 1958, 552 children were given screening tests of hearing in three child welfare centres. As a result, 16 were referred to the diagnostic clinic at the Department of Education of the Deaf. In the same year, Humphreys stated that of 5,494 children under five, to whom the screening tests had been given in the City of Leicester, 6 had been found to be profoundly or sub-totally deaf, one was found, after otological examination, to be suffering from severe middle-ear disease, one had multiple congenital handicaps and was under paediatric care, and two others, although tested on three occasions, were not responding normally to sound. Humphreys emphasised that the screening tests were carried out by health visitors as part of their normal duties.

Medical officers and many health visitors in the service of the Cheshire Health Department have attended courses in the screening tests of hearing and they are widely used in the county. Forty-three children, under five years, are already known to have defective hearing. There are about 60,000 children in the county within this age-range. A sampling survey of the hearing of an age-group of babies is now planned.

As an alternative to making screening tests of the hearing of all babies and young children, Howorth has published results of the use of the tests in Lancashire with special concentration on children under five years old in nine vulnerable or risk groups. Children were selected for testing on a basis of family history of deafness, history of virus infection of the mother during pregnancy, etc., and children not speaking well.

Through tests of 662 children in vulnerable groups, Howorth found 6 with defective hearing, of whom one was aged under two years. Through tests of a general population of 5,531 children she found 14 with defective hearing of whom 6 were under two years of age.

In the United States, from the Johns Hopkins Medical Institutions, J. B. Hardy, Dougherty and W. G. Hardy, as part of a general study of infantile development, examined 502 babies, of whom 348 were between three and thirty weeks old. They concluded that their screening tests " give promise of good effectiveness as a general public health measure for use with infants of six months of age " and " are quite effective as a special test in the hands of well-trained personnel for infants in the range between one and six months."

Summarising what is known about this part of our subject, it may be said that special procedures have been found to be effective in detecting incapacity to respond normally to sound, among babies and young children. A preliminary inspection of the statistics now being collated at Manchester shows that there are wide variations in the numbers of deaf children under five who are known to different health authorities. Wherever special steps have been taken to ascertain them, or to provide parent-guidance in audiology clinics, the numbers known to authorities have much increased. It is clearly urgent that this work, which, already, in England, has the approval of the Ministry of Health, be placed on a national footing.

Detection of Deafness among School Children

Statistics about the incidence of defective hearing among school children in different counties and county boroughs in the United Kingdom vary considerably. There has been increasing acceptance of the importance of screening children's hearing by the sweep-frequency technique of pure-tone audiometry, though it is not infrequently said that adequate staff is not always available. Walby reported that, in the City of Belfast, 585 children (10.4 per cent.) of 5,630 sweep-tested at school in 1958 failed to pass in both ears at six frequencies (500 to 8,000 cycles per second) at a sound level of 20 decibels. In the United States, District of Columbia, a recent investigation on use of sweep-check screening with 4,393 children, by eleven trained audiometricists, has been reported by Copenhaver and Campanelli. As in Belfast, the failure criterion was a response above the 20 decibel level, in either ear, at one or more frequencies. The number of children who failed was 327—approximately 7.5 per cent.

The main conclusion that can be drawn from the results of this type of investigation seems to be that, as in the case of screening tests of the hearing of babies and young children, many impairments of hearing are brought to notice that have not previously been diagnosed or treated. In Reading, with a school population of 18,000, some 3,000 school-children aged five years underwent sweep-frequency testing in 1957-59. Approximately 150 each year are stated to have been successfully treated for ear troubles at the Royal Berkshire Infirmary. In November, 1959, 32 children were classified as needing special educational treatment on account of partial deafness. Fourteen of them, however, had not been born locally, their parents having moved into the town because of its provision of day-units, attached to ordinary primary schools, for children with defective hearing. Between 1955 and 1959, 21 children were admitted to a special class for seven to eleven-year-olds and between 1957-1959, 14 children were admitted to a special nursery-infant class. The hearing losses ranged from an average 20 decibels to an average 100 decibels. In addition, several children from Reading were attending residential schools for the deaf or for the partially deaf elsewhere. Of the 35 children under twelve

years admitted to the special units in the town, 16 had been transferred to ordinary schools after periods of educational treatment in the special units varying from two terms to four years.

These figures have been quoted in detail because, like those for Denmark, they are the result of what must be described as a clearly-defined policy, strongly supported by higher authority, to deal comprehensively with deafness in childhood by close co-ordination of the work of medical officers, medical practitioners and consultants, audiologists, psychologists and teachers of the deaf acting in various capacities.

Incidence of Defective Hearing among Children

The Danish figures of incidence among children with defective hearing that calls for some form of special educational treatment seem likely to be the most reliable. On the basis of those quoted earlier in this article, one per thousand of all children aged seven to fourteen years are pupils in State schools for the deaf and severely hard-of-hearing, 1.34 children per thousand attend ordinary schools with hearing aids and help from peripatetic special teachers, and a further 0.2 are classified as " under audiologic treatment," while attending ordinary schools without hearing aids, giving a total of about 2.25 per thousand. It seems probable that the findings of our Cheshire Survey may present a somewhat similar picture, as the Reading reports, and that a total of about two per thousand school children may need special educational treatment, on account of defective hearing, in comparable socio-economic conditions.

Medical and Surgical Treatment

Examination of available information indicates an urgent need of more surveys that include investigation of defective hearing among children in terms both of medical and educational treatment. No data derived from large populations are yet available—or perhaps even exist—that tell us to what extent the considerable percentages of children found by sweep-frequency screening tests to have impaired hearing are being reduced by modern medical or surgical treatments. Cawthorne, Otological Consultant to the Ministry of Health, and Goodhill, Consultant in Otolaryngology, Children's Hospital, Los Angeles, have referred to new forms of therapy and operative procedures to which forms of middle-ear deafness are proving amenable. Cawthorne has said that the child who is unduly susceptible to colds and who always goes deaf with a cold can present quite a problem. Our clinical experience includes many such cases. Every incurable deafened child, he has stated, should be seen by an otologist once each year, in case " a super-added conductive deafness" may be preventing the child from making what use of the hearing that he has.

These medical needs and potentialities have much relevance to the results of educational research. Screening tests of the hearing of school children clearly have great value in that they find many previously unreported cases of children who need either medical or educational treatment for deafness—or both. Among 148 children of school age whom medical officers, consultant otologists and consultant paediatricians have referred to our joint otological-audiological sessions in the Department of Otolaryngology

at Manchester University, in 1958/59, 65 were eight to ten-plus years old, and 42 were aged eleven to sixteen-plus years. In a majority of cases the onset of deafness had been in infancy and early childhood. The importance of measures to secure earlier attention to such cases need not be stressed. Cases still occur in which children diagnosed as mentally-retarded and placed in special schools or classes on that account, prove to be handicapped by deafness and make good progress in mental growth and educational treatment when transferred to schools or units for the partially deaf or for the deaf.

Pure Tone and Speech Tests of Hearing

There are several modern forms of screening tests of the hearing of school children. In England, in 1954, as a result of Midgley's investigation at Manchester, the Medical Research Council recommended individual sweep-frequency pure-tone testing at five or six years of age, at frequencies 250 to 6,000 cycles per second. This technique probably continues to be the most reliable and least time-consuming for general use with all kinds of children. It is important that pupils should be tested as soon as possible after admission to school, to avoid risk that those with defective hearing may become failures with all the damage to emotional and social development as well as to educational attainment of which we see evidence in our clinics, week by week. Watson has constructed and standardised speech tests of the hearing of English school children. Increasingly, we find at Manchester that as in the case of babies, it is desirable to make tests of children's capacity for auditory discrimination as well as of their auditory acuity. Speech audiometry is an essential technique in audiology clinics and diagnostic sessions. Its use for screening tests of the hearing of school-entrants presents a problem in terms of the time needed to give each child a long enough list of words or sentences to test his hearing reliably.

Reliability of Tests of Hearing

In 1949, Watson and Tolan, after summarising the varying results of many different surveys, involving several million American children, referred to differences in the calibration of audiometers, in procedures for testing children and in the efficiency of audiometricians. The first of these variables can now be brought under control by insistence on the calibration of audiometers to the British Standard zero reference level. (Hallowell Davis, of Central Institute and Washington University, St. Louis, has stated that international sentiment favours this rather than the American standard.) Variables in procedures and proficiency can best be controlled, we believe, by the training and appointment of expert audiologists to take charge of personnel who make screening tests of children's hearing, in all units of county borough and county size. A one-year, full-time, advanced course leading to a Diploma in Audiology, was established at Manchester University, for this and other purposes, in 1958. Qualified audiologists are capable of submitting results of screening tests to periodic statistical analysis and of reviewing procedures and equipment in the light of developing knowledge.

Deafness, Linguistic Development and Educational Attainment

It will have been noted that at Reading a child with an average hearing loss of 20 decibels was considered to need special educational treatment. Brereton, of the Com-

monwealth Office of Education, Australia, in the course of a research extending over seven years, found that it was usual for children with hearing losses of about 45 decibels to reach five-year-old scores in using and in understanding spoken language by the age of about eleven years. We have found that, as Brereton's statements would imply, some children with hearing losses below 45 decibels are linguistically retarded. No direct, or constant, relationship between degree of impairment of auditory acuity and backwardness seems to be indicated. Each child with impaired hearing needs individual, comprehensive examination to determine his hearing for speech, linguistic and social development, abilities and mental growth.

Modern research is revealing the population of children with impaired hearing as heterogeneous to an extent not previously known. It is emphasising sociological and emotional aspects of many of their problems. Before attempting the fresh appraisal of their needs that this new knowledge demands it is advisable to consider the work of schools for the deaf as they now exist. In most countries it is these schools that provide most of the special educational treatment available for children with defective hearing.

In the past, the ambition of well-educated parents of deaf children was frequently to fit them for attendance at ordinary schools, or even universities. In the United Kingdom, Australia and other countries, since 1946, there has been an increase and broadening of the basis of effort towards normalising the education of the deaf in terms of curriculum. There are three secondary schools for the deaf in England and a small but growing number of pupils are taking the General Certificate of Education. At the Mary Hare Grammar School and the Burwood Park Secondary-Technical School, pupils are given science teaching in well-equipped laboratories, very much like their opposite numbers in ordinary grammar or technical schools. Admission is by selection. Ex-pupils of the Mary Hare School, which was opened in 1948, are following successfully a wide range of professional, technical and clerical occupations, as well as others that involve craftsmanship. The Headmaster of the Burwood Park School has reported that ex-pupils now serving apprenticeships are taking technical courses with non-deaf students, in evening classes and day-release schemes, and are needing only a little extra help. Drewry has found sixty-six occupations that have been followed by deaf persons.

Numbers has reported an investigation in which questionnaires were sent to 315 former pupils of the Clarke School for the Deaf, Massachusetts. Of 225 who replied, 89 had completed ordinary High School courses successfully, with non-deaf students, after leaving the Clarke School and 11 were at High Schools at the time of her report. Twenty-nine had taken degrees at colleges or universities, 7 had gained Masters degrees and 2 Ph.D. degrees. Admission to the school is not selective in the ordinary English sense of that word, but a minority of children for whom places are sought are not admitted if found unlikely to benefit from the type of education that the school offers.

Administering the Gates Reading Vocabulary Test to pupils in the Mary Hare School, in 1950, Gaskill found that 4 out of 33 partially deaf pupils obtained maximum scores (reading age = 18 years) and 5 deaf pupils showed vocabulary ages of at least 14 years. In 1956, Bates published results of a research that included a study of 39 pupils of the Mary Hare School during five years. In terms of the Gates Vocabulary Test, 8 pupils who had become deaf after the age of five years had normal scores on admission

to the school, 14 other partially deaf pupils were about one year retarded and 17 deaf pupils were two to three years retarded. He found that the deaf pupils in the school progressed at the same rate as normal children but were always between two and three years retarded on average.

In the United States, in 1954, Fusfeld described an investigation of 134 candidates, aged 14 to 21 years, for admission to the preparatory class of Gallaudet College, Washington, D.C. The average age of the male candidates was 19.3 years and of the girls 18.9 years. Meyerson has described them as representing " the intellectual and academic elite " of students graduating from American state residential schools for the deaf. From Fusfeld's findings it would appear that it had taken 18 and 19-year-old candidates over twelve years of schooling to reach a medium grade achievement equal to that of the average American non-deaf pupil of 15 years. The candidates were given the Stanford Achievement Test, Advanced Battery, Form J. Fusfeld did not distinguish in his report between deaf and hard-of-hearing candidates.

The average attainment of pupils in schools for the deaf in the United Kingdom and the United States is considerably less good than that of the two selected populations to which reference has just been made. It must be said at once, however, that the most noticeable feature has been a very wide range of variation. K. P. Murphy, after conducting an investigation from Manchester University, in 1957, published results of administering the Gates Vocabulary Reading Test to 513 twelve-year-old pupils in 36 schools for the deaf. As between schools, mean scores varied from a mean of 4.29 with a standard deviation of 3.59 to a mean of 19.87 with a standard deviation of 16.4. Scores in the Schonell Mechanical Arithmetic Test ranged from a mean of 5.7 with a standard deviation of 5.5 to a mean of 10.0 with a standard deviation of 8.7.

The scale of linguistic development for deaf children, constructed and standardised by Owrid at Manchester, includes three tests of comprehension and use of speech for children aged 5 to 8 + years. There are also developmental schedules based on a study of more than 100 children with impaired hearing who were in attendance at the pre-school clinic in the Department of Education of the Deaf and in nursery schools for deaf children. The tests were standardised on groups of which the smallest included 307 children and the largest 372 children. The reliability figures in each test were high, all being greater than $r = 0.9$. The tests were also administered to 80 children with unimpaired hearing attending ordinary nursery schools. As has been mentioned earlier, Owrid found that there were considerable and statistically significant differences in favour of children who had had home-training, including the use of hearing aids before admission to school, as a result of guidance given to their parents in the University clinic. About three-quarters of the children in each of Owrid's test groups were severely or profoundly deaf. Reference will be made later to two others of his findings that are significant to school placement.

As part of a study of secondary-modern education for deaf pupils, Wollman, of Manchester University, has given tests in English comprehension, language structure and written expression and tests in mechanical and problem arithmetic to 300 pupils between the ages of 14 and 16 + years in thirteen English non-selective schools for the deaf and partially-deaf. An analysis of the results is in progress. Among his tentative conclusions

Wollman reports wide variations in mean scores obtained in different schools. In general, schools occupy the same positions in all four tests.

Causes of Variation in Linguistic Development and Educational Attainment

The causes of these variations demand investigation. In a report to the Medical Research Council's Committee on the Educational Treatment of Deafness, in 1953, Gaskill and K. P. Murphy summarised " general causes of backwardness in deaf children " that included frequent changes of teacher, poor home conditions, late entry, personality problems and lack of incentives to linguistic development. It was clear that all the factors that could cause backwardness among non-deaf children could retard the progress of deaf children. Some difficulties mentioned in the report that were most prevalent during the immediate post-war period, such as shortage of trained teachers of the deaf and, not unrelatedly, absence in some quarters of schemes of work to ensure continuity of teaching throughout schools, have since been considerably remedied. But evidently, variation in deaf children's attainments continue to be great.

Probing more deeply, we note that as a result of testing 150 deaf children with the Alexander Performance Scale of Intelligence, Ewing and Stanton found in 1943, that thirteen per cent. had indices below 60. Six years later Blair Hood, after administering the same test to 401 pupils in special schools for the deaf, reported a bi-modal distribution of I.Q.'s. After administering to 370 deaf children aged 18 to 65 months, the Atkins and certain Merrill-Palmer Tests of Intelligence, Kendall in 1957, stated that he had found a significantly high number of deaf children whom the tests indicated as seriously retarded. He wrote that in almost half the cases where there was severe mental retardation the cause of deafness was associated with either maternal rubella, rhesus incompatibility, or tuberculous meningitis treated with streptomycin, whereas in the group as a whole these factors were only present in a quarter of the cases.

Today, as a result of specific researches of which we began the first some five years ago, factors associated with the causation of their deafness are becoming emphasised as having, in many cases, significance to their development and education.

An important subject of investigation among children with impaired hearing has long been evaluation of their capacity to discriminate the sounds of speech. In 1930, before electronic hearing aids were available, many teachers of the deaf feared that to let partially deaf children hear while undergoing instruction would adversely affect their capacity to lipread. But, the late Lady Ewing wrote, " Hearing is the strongest incentive toward speech and language. It is the basis for the natural development of speech and to deprive (a child) of the sounds that he can hear naturally, is to take from him vital experience in speech and language which can be given him in no other way." In 1936, Ewing, Ewing and Littler, and in the following year Kerridge, reported tests of the capacity of deaf children to hear speech with hearing aids. In the same period similar investigations were begun in America at the Clarke School, Massachusetts, the Pennsylvannia School for the Deaf at Philadelphia, Central Institute for the Deaf, St. Louis and elsewhere. Hudgins, in a recent paper on the basis especially of continuous post-war research at the Clark School, had distinguished children in three categories whom he describes as: (1) hard-of-hearing, with hearing losses that may be placed arbitrarily at 60 to 65 decibels in the speech range of frequencies; (2) partially deaf, with hearing

losses between 60-65 decibels and 80-85 decibels; and (3) profoundly deaf, with losses ezceeding 80-85 decibels. He has stated that " The hard-of-hearing group offer relatively minor problems with respect to auditory training. The partially deaf who enter school with practically no speech discrimination and with little or no intelligible speech, respond readily to an auditory training program and often achieve a high degree of communication skill. Many of the children in this group, following training, are able to continue their education in public schools." The profoundly deaf, he said, are capable of responding to training that enables them to use their residual capacity to hear to supplement vision in a bi-sensory process of speech perception. Hudgins has supported this statement with a graph showing the increase over five years, in the capacity to perceive speech by hearing combined with lipreading, of 50 profoundly deaf children.

Our own findings at Manchester support the general trend of Hudgins' conclusions, with an emphasis on the urgent need of all children who have hearing losses between approximately 60-65 decibels and 80-85 decibels to have continuous auditory experience with hearing aids in acoustic conditions that make their use effective.

Causation of Deafness and Capacity to Hear Speech

There is, however, as Hudgins and we agree, no direct or constant relationship between degree of auditory acuity, as measured by pure-tone audiometry, and capacity for speech discrimination, as measured by speech audiometry except, perhaps, in cases of conductive deafness with a middle-ear pathology. This has been notably demonstrated by recent results of speech tests of hearing associated with investigations of causation of deafness. The research has been made jointly by senior members of the staff of the Department of Education of the Deaf and the Department of Otolaryngology at Manchester University, with assistants provided by the Medical Research Council.

Children whose deafness has been diagnosed as associated with certain aetiologies have been found to constitute vulnerable groups as regards capacity for speech reception by hearing alone. The following is a preliminary statement of trends in capacity to hear speech among children in these categories.

TABLE 2 — **Capacity for Speech Reception in Relation to Causation of Deafness**

Causation	*No. of cases*	*Auditory Discrimination*		
		Poor	*Moderate*	*Good*
Conductive deafness	25	0	6	19
Acute infection	10	4	2	4
Unknown–perceptive	36	12	8	16
Heredity	17	7	5	5
Meningitis	16	8	3	5
Kernicterus (Rhesus incompatibility)	13	8	2	3
Kernicterus (of prematurity)	12	8	3	1
Maternal rubella	10	7	1	2
Total	139			

The diagnoses quoted in this table were made by Mr. Kenneth Harrison, F.R.C.S., and the statistics have been collated by Mr. J. C. Johnson and Mr. D. Sanders. The tests of speech-reception are made by speech audiometry with monitored live voice. According to the ages and linguistic development of the children, either the Toy Vocabulary or the Watson Picture Vocabulary Test or the Watson Word-lists are used. Scores, as classified on a three-point scale, in the table above, are those obtained by each of the children at the level of intensity at which he or she heard best. They indicate capacity for speech reception with a very high-fidelity hearing aid, in very good acoustic conditions.

Watson, a member of our team, making an independent study of capacity to hear speech, found that children whose deafness was diagnosed as conductive obtained higher scores, in general, than those with perceptive deafness.

Deficiencies of the Nervous System and Auditory Impairment

It is accepted that some forms of auditory impairment relate to damage within the brain and not necessarily to lesions or deficiencies of the end-organ of hearing—the ear. Crabtree, Cavanagh and others have investigated defective response to sound associated with kernicterus, that is damage to the basal nuclei of the brain by pigmentation as a result of neo-natal jaundice. At the International Conference on Audiology at St. Louis, in 1957, Goldstein, Hardy, Mykelbust and Trenque contributed to a panel discussion on psycho-acoustic development and tests of auditory function. There was general agreement that a number of children suffer from impairments of hearing associated with deficiencies of the central nervous system, the causation of which can sometimes, but not always, be diagnosed. Mykelbust stated that he had studied 68 pre-school-age children with central involvement and 142 having aphasic and other types of involvement. In England and America obstetrical trauma have been quoted as sometimes responsible for deficiencies in speech reception and dyslalia. Bordley and Haskins have reported from the Department of Otolaryngology of the Johns Hopkins University School of Medicine a research to study patients who " have the physiological ability to hear but are unable to analyse and to comprehend what they hear." They examined especially older adults with defective hearing. They suggest that the difference between the hearing thesholds by standard, subjective audiometry and objective psycho-galvanic skin-resistance audiometry indicates approximately the degrees of sclerosis of the auditory area of the cortex and that this has relevance to incapacity for auditory discrimination in children.

We would agree with the contributors to the panel discussion at St. Louis that among children referred for audiological testing and among pupils in schools for the deaf and partially deaf, there is a significant number who, on paediatric or neurological examination, are found to suffer from deficiencies of the nervous system. Taylor, at Manchester, is investigating this problem in relation to their educational treatment, as well as that of children suffering from some form or degree of cerebral-palsy who have impaired hearing. Fisch, of the Royal National Throat, Nose and Ear Hospital, London, after testing 420 cerebral-palsied children stated, in 1957, that the incidence of hearing loss which causes a serious handicap to the child was 20 per cent. Connolly, from Manchester University, testing 262 cerebral palsied children, found that 3.1 per cent. had a hearing-loss for pure-tones that exceeded 35 decibels, and 4.2 per cent. a bilateral loss of from 15 to 35 decibels. When monaural losses were included 22.2 per cent. of the children had losses over 15 decibels. The present writer has published an account of a study of 50 cerebral-palsied children with impaired hearing.

In personal communications the principals of a school for the deaf and a school for the partially deaf, in England, have estimated that 10 per cent. of their pupils suffer from some other handicap besides deafness. In the United States, Meyerson, Assistant Professor of Psychology, University of Kansas, has stated that he has examined pupils in schools for the deaf who were feeble-minded or mentally retarded, children who had

thyroid and pituitary disorders, brain damage, aphasia, epilepsy, various kinds of cerebral palsy and grave defects of vision. He reports that some of them had severe losses of hearing, but " the hearing impairment was not their greatest problem nor the major contributory source of their behaviour."

To put the matter succinctly we ask, " How can a teacher of the deaf with eight or ten pupils in a class, provide satisfactorily for their needs if one of them has another handicap and is incapable of associating effectively with them in group work? " The teacher's dilemma is all the greater and the risk to satisfactory progress of the group as a whole the more serious, when the additional handicap from which the one child suffers is, for instance, cerebral palsy, with which the teacher has not been trained to deal. This is not an infrequent situation in schools for the deaf and partially deaf. The London County Council and the West Riding Education Committee each have a school for " deaf children with additional handicaps." A unit for deaf-blind children is provided by the National Institute for the Blind and the Wilfred Pickles School for Spastic Children, has recently established a unit for spastic children who are deaf, but there are many children whose deafness is associated with additional handicaps who are pupils in other schools. Streng, Chairman of the Department of Exceptional Education, University of Wisconsin-Milwaukee, and others, described experiments in teaching deaf and hard-of-hearing children with special problems, at the biennial meeting of the Alexander Graham Bell Association in 1958. Besides provision of a stable learning environment, happy to the child personally, Streng, emphasised a need to break down language into simple forms, special help to children in structuring situations, avoidance of complicated materials and preparation by teachers of special charts and, later, books. From our own limited experience of the education of cerebral-palsied children with defective hearing we would say that close co-ordination of modern procedures in the treatment of both handicaps is usually needed.

Children with defects of hearing who have a visual handicap or are mentally retarded

There is likewise a need for specific study of deaf children with defects of vision, who are not pupils in the N.I.B. unit. Then there are the deaf children who are mentally retarded. L. J. Murphy, after giving the Performance Sub-Scale of the Wechsler Intelligence Scale for Children to 300 pupils, aged 6.6 to 10.6 years, in English schools for the deaf, reported that he had found 17 children with Performance Quotients below 75. In his tests of 513 pupils in 36 English, Welsh and Irish schools, aged 12 years, with the Wechsler Adult Performance Scale, K. P. Murphy found 21 cases of P.Q.'s below 75 and 21 cases of P.Q.'s 75-79. There appears to have been no investigation, as yet, of the problems and needs of mentally retarded deaf children.

Special Schools, Special Units and Ordinary Schools

In the present phase of changes in the organisation of education for children with defective hearing much consideration is being given to inter-relation between sociological and linguistic factors. Brereton's four-year study, in Australia, of 90 deaf children, is a rather notable example of this. Their hearing losses (mean 64 decibels with fairly flat

audiograms) existed from birth and about 90 to 95 per cent. of them were associated with a history of maternal rubella. Their intelligence quotients, as measured by a test not demanding the use or understanding of language showed a normal distribution between 75 and 111+. Seventy-four children were born between January and June, 1941. Of the total of 90 children, 31 attended schools for the deaf, 21 special classes attached to normal schools, 15 first attended these special classes and then normal classes, and 19 attended normal classes. Each child was interviewed individually at about $7\frac{1}{2}$, again at about $9\frac{1}{2}$, and finally at about $11\frac{1}{2}$ years of age.

Brereton concluded that " the differences shown in the achievement of the more able and the less able of the children studied was very great. These differences appear to depend upon the children themselves and on their personal history. . . . Even within the limits of the group studied it would be necessary to make plans for one child very different from those made for another." She found that in the cases of children with hearing losses about 65 decibels and scores on the Nebraska Test of Learning Aptitude about 95-99, 22 of whom spent most of the period of observation in a special class, and 22 at a school at which most of the pupils were profoundly deaf, " differences in the midmost scores on all the tests, except knowledge of number, favour the children attending special classes rather than special schools. The deficiencies were not marked but they appeared to become greater between $7\frac{1}{2}$ and $11\frac{1}{2}$." The difference showed most in a more extensive use of spoken language and command of words and written language. Brereton says, " Children in these classes appear to be learning to treat language as something real, and which also can be expressed in writing." She believed that " observation of the dramatic quality of speech in action, of the rhythmic intonation of natural speech and of the sorts of phraseology that occur frequently in everyday life " is of the greatest importance, especially when rhythmic patterns of normal speech are encountered in situations which give meaning to the pattern as a whole."

Our own experience over many years supports Brereton's conclusions. We would agree that the first principle of school placement for children with defective hearing is to base it on ability, linguistic development and attainment, with the possibility of upgrading always available for individual children. We have sound-recordings of the speech of deaf children in the hearing-loss category between 60-65 decibels and 80-85 decibels, and a few of more profoundly deaf children, that illustrate the effects on their linguistic development of much experience of hearing and using the rhythm patterns that are normal to speech. There is continuity of sound in their utterance of phrases—apart from normal stop-gaps of plosive consonants—as contrasted with the sequences of separately-spoken words that tend to characterise the speech of many deaf children. The duration of syllables and words as they occur in phrases and sentences spoken by the auditorily-experienced children is much less than that of children whose speech has no primary basis in hearing.

Hearing Aids, Linguistic Development and School Progress

The children whom Brereton studied were supplied with individual hearing aids but she found great variations in the children's attitudes to their use. Dale, at Manchester, found a similar situation. When he began his study 17 out of 28 pupils in ordinary schools

who had been supplied with hearing aids never used them out of school. Few of the 28 used their aids all the time in school and half of them not very often. Dale successfully initiated remedial measures to influence the attitudes of the children, their parents and teachers, towards their deafness and their hearing aids. He was able to improve the extent and the efficiency with which the aids were used. For this kind of work and to meet the special problems that are involved, peripatetic teachers of the deaf are needed, with special aptitudes and training.

Some of the problems are social. As Dale has shown, hearing aids are, as yet, a form of prosthetic device unpopular with children. Neither children nor parents, in many cases, wish to draw attention to their deafness. Parents, children and teachers in ordinary schools need guidance about the possibilities, limitations and management of hearing aids. There is basic information, such as the need for different volume-control settings to give best results in different acoustic conditions, the importance for a hearing-aid user of being as short a distance as possible from a person who is speaking to him, especially in a large room, and the fact that the clarity of utterance and a quality of voice that is good for broadcasting help him much. As John has shown, as a result of his research, and those investigations that he has made in collaboration with Thomas, in our Department, an amount of room-reverberation that passes unnoticed by ordinary listeners can be very adverse to successful use of a hearing aid. Reverberation time should not exceed 0.5 seconds, but this condition is only attainable in schoolrooms as a result of acoustic treatment applied to walls and ceilings. It is practicable in rooms especially selected and sound-treated, at a certain amount of expense, for use by groups of children with impaired hearing. Acoustics in private homes are usually better and, for that reason, it must be urged that when pupils of ordinary schools are supplied with hearing aids, they and their parents should be helped to make their use a success at home, before they are expected to use them in ordinary schoolrooms, that are often very reverberant.

This technological criterion, which in itself involves social factors, goes far to determine the possibility of a deaf or partially deaf child's successful attendance at a normal school. If, before admission, he has achieved a standard of linguistic development, as a result of training elsewhere, that equips him to compete successfully with non-deaf children, he may succeed. Much, in that case, depends on his personality and capacity to meet difficulty and the extent to which his parents and teachers—to some extent his fellow non-deaf pupils—have been helped to understand his position. But if, to a considerable extent, he has yet to learn to understand and use his native language, he becomes greatly dependent on his capacity for auditory discrimination and successful use of a hearing aid. Templin, of the University of Minnesota, has shown that the sound-discrimination ability of non-deaf children of pre-school and school-age shows a consistent increase with age, up to 8 years, with the rate of increase most rapid before the age of $4\frac{1}{2}$ to 5 years. Two factors emerge as regards school placement of a child with defective hearing who has ascertainable capacity to benefit from use of a hearing aid. The first is, " Are acoustic conditions in the school, in which it is proposed to place him, favourable to his progress in speech discrimination? " The second is, " How far will the social conditions give him opportunities of experiencing and using much normally spoken language in real-life situations? " Examples are on record, which show that in special

circumstances a deaf boy or girl can become able to rely on use of text-books to a more than usual extent, or be helped by supplementary coaching.

A further question, affecting admission either to boarding or to day schools is " How far will his out-of-school life be stimulating to his mental growth ? " Here it must be noted that Owrid in his use of his Language Scale for Deaf Children found pupils of day schools for the deaf significantly superior to pupils of residential schools. Yet this is not always or necessarily so. Certain boarding schools for deaf children in England and America which provide much stimulating out-of-school experience and have trained staff always available to talk to their pupils, achieve and maintain high standards. Members of the International Congress at Manchester, in 1958, will remember a demonstration by Goldsack, the head teacher, and pupils, of the Dockray House nursery-infant branch of the Royal Schools for the Deaf, Manchester. Groht, in her book *Natural Language for Deaf Children*, included verbatim transcriptions of lessons as actually given to twelve-year-old and fifteen-year-old classes of deaf pupils in the Lexington School, New York. Characteristics of all the lessons transcribed in the book were the use of colloquial English, in sentences, by pupils as well as teachers, the fairly normal length of sentences spoken spontaneously, use of subordinate clauses by pupils and the range of their knowledge as well as their vocabulary.

Need for deaf children to hear their own voices

Emerging as a main factor in the linguistic development of very deaf children is the extent to which they can be enabled to hear their own voices. Experiments have been made by Di Carlo to measure the extent to which different categories of deaf children rely or become reliant on hearing their own voices and speech. In all such cases their speech is disturbed if the reproduction of it through their head-sets is delayed so that they are made to hear themselves saying a previous syllable when seeking to utter the next one. In his new book, *Experiments in Hearing*, von Békésy, of the Psycho-Acoustic Laboratory of Harvard University, gives data to show that non-deaf people rely, equally, for hearing and controlling their own voices and speech, on hearing by bone conduction and hearing by air-conduction. John and the writer have found that capacity for hearing by bone-conduction is vestigial or doubtful in many children who suffer from severe or profound perceptive deafness. Almost all of them can hear their voices by air-conduction if they are much amplified by a hearing aid, but some of them have to speak close to the microphone of the aid to obtain much help in doing so. In the absence of ability to hear their own voices, deaf children, beginning in infancy and apparently towards the end of the first year of life, are less motivated to use them. A profoundly deaf child, not yet five years old, recently seen by the writer, making very good use of residual hearing and talking well as a result of training with special apparatus combined with lipreading, had formed a habit of speaking with her lips touching the microphone that she wore on a collar.

It has been found that severely and profoundly deaf children can be given much better experience of hearing speech with portable speech training aids and group hearing aids, equipped with external receivers worn on headsets, than with any wearable or other type of hearing aid to which insert receivers are connected. Group aids are used in many special schools for the deaf and schools for the partially deaf and are sometimes needed in units for children with defective hearing attached to primary schools.

Mental Health and Social Adjustment of Children with Defective Hearing

Finally, but of the utmost importance, there is need to consider the extent to which life in a hearing, sound-communicating world involves deprivation and stress for deaf children. Irene Ewing and others, who have lost hearing or become dependent upon hearing aids for their auditory experience, have described how, without their aids, the instant-to-instant information that they receive from their environment is drastically reduced, the sound of their own movements, even of their own footsteps sometimes abolished. With hearing aids (unless binaural) localisation of sound is abolished and, as in broadcasting, but much more so, sounds of daily life are distorted. All this, combined with difficulty in speech-communication, makes for a sense of insecurity. For children who have never heard normally there is greater deprivation. Levine, a consultant to the Federal Office of Rehabilitation and on the staff of the Psychiatric Institute, New York, made a study of 31 " normal " deaf girls aged 15 to 18 years, with hearing parents. All had their handicap from before the age of three years, with hearing losses greater than 70 decibels. Levine used the Wechsler Adult Scale of Intelligence and the Rorschach Test. She reported that the personality pattern of her deaf subjects were characterized by: " (i) pronounced underdevelopment in conceptual forms of mental activity; (ii) emotional underdevelopment; (iii) a substantial lag in understanding the dynamics of interpersonal relationships as well as the world about; (iv) a highly egocentric life perspective; (v) a markedly constricted life area; and (vi) a rigid adherence to the book-of-etiquette code rather than inner sensibility as standards for behaving and even for feeling." She considered that within their school, the girls' patterns of thinking, feeling and reasoning were under few, if any, strains or pressures. They were " well understood, their responsibilities are few, important decisions are generally made for them and they are at ease."

In these descriptions and in those quoted by Levine from other workers, we may recognise aspects of behaviour that we have sometimes observed among older deaf children and even adults.

The paper given by Numbers, at the Manchester International Congress, on a long-term follow-up of 225 former pupils of the Clarke School strongly suggests a different picture. " The data indicates that our graduates succeed in getting along with hearing people to a remarkable degree, even though there may be moments of frustration," she said. " These men and women make use of the resources of courage, powers of persistence, and patience under difficulty, which they have built up over a long period of time. In answer to the question, ' What difficulties did you encounter in obtaining employment or in adjusting to your job? ' they responded: ' No problems '; ' None worth mentioning '; ' None I couldn't resolve myself '; ' I was aware of certain limitations, but was able to overcome many obstacles ', etc. In other words, they face problems as they arise and do the best they can about solving them, without undue emotional stress. They apparently become aware, too, of the fact that many of the problems they encounter have to be faced by all people, not just the handicapped."

We have quoted Numbers at some length because, being a distinguished and long-experienced teacher of the deaf, she is describing not only the results achieved by education but the underlying philosophy and day-by-day training that made them possible. She is

describing an essential function of the best teachers of the deaf and the kind of help in personality development that is indispensable to many deaf children.

Meyerson has postulated three alternative patterns of social adjustment that may be adopted by deaf persons. It is undoubtedly true that different deaf persons identify themselves, or become identified, in varying degrees, with non-deaf and deaf groups. In answer to the question, " Would it have been better to have continued your education in a school for the deaf," an overwhelming majority of the 195 Clarke School former pupils, who had passed on to normal schools or colleges, said " No." Of Numbers' cases, 30 went to work directly after completing the course of study at Clarke School.

School Placement

Administrators, educators, psychologists, parents and others in England today are asking whether all deaf children can be equipped to go to schools with normal hearing children. We know that some can and very evidently others cannot. Numbers asked, " At what age should deaf children be expected to go into schools with normally hearing children? " We would agree with her answer, " When he can do the work successfully."

Linguistic development—capacity to understand and use normal language, to acquire it through hearing and lipreading, reading and writing, have been stressed by Brereton and others as a key factor to successful school placement. A number of the Clarke School alumni spoke of the importance of the deaf individuals taking the initiative in talking with hearing people and putting them at their ease and of seeking the help of hearing friends in the correction of pronunciation or accent of words and in keeping up with current popular expressions. In an earlier report former pupils are quoted as saying that, during their first week at a normal school their hearing peers had difficulty in understanding them when they talked. " The intelligibility of their speech was such that theirs was a temporary difficulty."

Clearly, the earlier in life that a child with impaired hearing can experience happy and stimulating—rather than ineffective, over-difficult and inhibiting—social experience with non-deaf people and the more of it that he can be given, the better the possibility is likely to be that the deprivations and limitations of personality described by Levine can be avoided. A good home with parents expertly guided to help him from stage to stage in his development is one of his best hopes. Training to make effectual social contacts with non-deaf people must never be delayed until a deaf child reaches school leaving age. The needs and potentialities of the majority in this respect must never be neglected because there is a considerable percentage of retarded and doubly-handicapped children with limited or no capacity to share them.

If these conclusions are accepted on the basis of the data that we have quoted, present-day provision of special units attached to primary schools for auditorily-handicapped children and placement of deaf children in ordinary schools, with hearing aids, must be regarded as experimental. Well-documented reports on them, like that given by McLaughlin, on the placement of deaf children in day schools in New York, are very valuable.

As the World Health Organisation study-group at Geneva, in 1955, recommended, a child with impaired hearing should be examined and tested with modern resources of

audiology, otology, paediatrics, child psychology and special education; if necessary, also, of neurology and psychiatry. Continuous and truly scientific case-histories are required. The status and training of teachers of the deaf need to be improved. Levine has written: " the technique of teaching conceptualized language to the deaf is one of the most complicated and difficult of special tasks in all educational enterprise." As we have seen, the function of a good teacher of the deaf includes that, as well as good training in speech and hearing and subject-work. But it has therapeutic implications of a very special kind. Equally urgently, a supply of qualified audiologists should be made available for service in health departments and special schools as well as in university departments and hospitals.

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Human Abilities—I

THE CLASSIFICATION OF ABILITIES

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IN an earlier article in this journal it was pointed out that: " intelligence is best regarded as a fluid collection of infinitely varied thinking abilities." It is a kind of average of many different thinking capacities, and people differ considerably in their kinds as well as in their overall amount. Some children, and adults, obviously possess special talents, or deficiencies, in language, number, artistic and mechanical capacities, and so on; and they may vary, too, in such mental functions as memorizing, reasoning, quickness of thought and originality. Yet at the same time there is a common element running through all of these—what Spearman referred to as the *g* factor—so that most individuals who are above average in one capacity tend also to be above average in others. There is a common fallacy among parents that a child who is backward in school work is, *ipso facto*, superior ' with his hands '; but while such cases do occur, they are the exception rather than the rule.

In giving educational or vocational guidance, a measure of the person's all-round level or *g* provides the most useful single piece of information about him. But clearly we should not neglect such special strengths and weaknesses as do exist. Indeed, it is most important to elicit and build upon any talents, to plan the person's career around them, also to try to remedy particular deficiencies in development or school attainment. This at once raises the question—what abilities can be definitely distinguished, how are we to classify and measure them? The question is much more difficult to answer than might appear at first sight, and unscientific attempts to do so have often led to erroneous educational policies. For example, the faculty psychologists of the nineteenth century, on the basis of observation and introspection, regarded the mind as made up of a number of distinct faculties—reasoning, imagination, memory and so forth—and thus arrived at the misleading doctrines of formal discipline. One of their conclusions was that the memory faculty is well-developed in young children, but not the reasoning faculty, and this fallacy still influences conventional approaches to the education of six to nine-year-old children. Similar unjustified assumptions about mental capacities are involved when the grammar school teacher glances at a Moray House intelligence test and criticizes it because it picks out the ' Smart Alick ' rather than the child of ' profound ' intelligence, or dismisses all objective or new-type examinations because they appear to test ' memory for details ' rather than ' understanding '. Again, the false psychological theories of the Norwood Report regarding types of children are notorious.

Somewhat more reliable evidence might be obtained from the clinic and the mental hospital, where particular types of weakness are frequently observed in exaggerated form. Thus, certain brain injuries are associated with special defects of perception, speech, thought and movement; and with increasing age from about 30 to 80 there seems to be a decline in the flexibility and the integrative powers of the mind as distinct from the

capacity to handle routine problems. The anxious child probably tends to be more backward in arithmetic than in verbal subjects, the rebellious delinquent to be better in concrete abilities, as measured by performance tests, than in scholastic ones. However, progress in sorting out human capacities through the study of the abnormal is slow, and the most fruitful approach over the past thirty years has been through what is known as factor analysis, that is by analyzing the actual overlapping or correlation among varied mental tasks. Just as we are entitled to talk of a *g* or general intelligence because all abilities show something in common, that is they yield positive correlations with one another, so we can go further and discover closer correlations among various verbal abilities and thus distinguish a verbal factor, and similarly a numerical, a mechanical, and other factors or types of ability.

The statistical procedures involved in isolating such factors are highly technical, and no attempt will be made to discuss them here.* However, they provide a scientific and objective means of classification, even if their findings are still somewhat controversial and equivocal. Different factorists often tell rather different stories, for example, Professor Burt and the present writer, and Thurstone and Guilford in America. Guilford in particular seems to carry to extremes the breaking down of intelligence into different components, since he claims to have found some fifty factors and expects many more to be discovered later. But then he has worked chiefly with high-grade intellects such as air officer cadets, and it does seem extremely probable that greater richness of thinking (not merely more effective or intelligent thinking) exists at such levels than in the average child or adult. Indeed, the most appropriate picture or model of the mind depends considerably on the range of ability under consideration. In a secondary modern school population, for example, the tremendous range of general intelligence is so noticeable that marked special talents or defects are less important than in a grammar school group who are all rather highly selected for intelligence. Thus, it is not too difficult to teach secondary modern pupils in the same streams for mathematics as those for English, whereas separate setting for mathematics is much more common in the grammar school.

We would probably expect to require rather different classifications of important abilities at different ages, perhaps also in the two sexes or in different cultural groups—say Chinese and whites—(though little or nothing is known in the latter area). There is evidence that different kinds of education may also affect the pattern. For example, greater unevenness in the various branches of mathematics—arithmetic, algebra, geometry, etc.—occurs when these are taught as isolated subjects than when they are integrated in a single course. Under the latter condition it is more rare for children to be outstandingly good, or weak, in one branch and not in others.

Thus, the discrepances among factorial psychologists, referred to above, are not attributable merely to the natural quarrelsomeness of psychologists nor to their use of a variety of statistical techniques. The implication is rather that we should try to get away from the notion that the mind can ever be reduced to a limited number of definite

*It should be pointed out to readers who are acquainted with Professor Spearman's writings that the factors with which we are concerned here are very different from the specific or *s* factors whose existence he pointed out. Performance at any particular task involves something specific to that task alone, whereas we are interested in abilities that are common to many tasks of a similar character—i.e. in what are termed group factors. For example, it is of no interest to find that a child is particularly good at verbal analogies; but if we know that capacity at such a test is predictive of other verbal capacities (the verbal group factor) as well as of general intelligence (*g*), it does become important.

entities—faculties or factors—analogous to chemical elements, so that an individual can be completely specified by measuring how much *g*, how much verbal, numerical and other abilities he possesses. Abilities are continually shifting and developing, becoming diversified or interconnected, depending on people's education and their out-of-school experiences; and they can be classified and sub-classified in a multitude of ways. Nevertheless, certain relatively stable and broad categories of ability can be recognised, at least among children of school age and young adults in our Western culture. An attempt will be made, then, to outline those categories on which there is a fairly wide degree of agreement, and which are probably of main importance in educational and vocational selection and guidance.

One more preliminary point. We clearly must not think of talents and weaknesses as determined each by particular genes. In the case of physical and sensory capacities (bodily strength, vision, etc.), heredity plays a large part, though upbringing, nourishment, medical care and so forth can obviously modify them considerably. Again, children differ in their hereditary potentiality for building up what, in the previous article, we termed Intelligence B, though this is thought to depend on the combined contributions of large numbers of genes. There may well be innate influences in verbal, musical, number, and other talents. However, the common observation that these 'run in families' is probably attributable at least as much to the encouragement given by the talented parent to the development of similar talent in the offspring. But extremely little is known regarding the origins of these and other abilities. In answer to the question as to what kinds of experience and training most effectively stimulate their growth, the whole psychology of motivation and of learning is relevant. Here, then, we must confine our attention to taking a cross-section of the child or adult, as he is now, and as he is likely to continue in the near future.

Verbal-Educational *vs.* Practical Abilities

The clearest distinction is between verbal (and associated educational) abilities on the one hand and spatial-mechanical-practical ones on the other. This does not mean, as the Norwood Committee and many parents believe, that there are two contrasted types of children; for most of those who are superior in one respect tend to be superior in the other. It is true that psychologists, when studying an individual child or adult, like to use the Wechsler Intelligence Scales, which provide separate Verbal and Performance I.Q.s; but, in fact, these scales measure general ability some five times as effectively as they measure this verbal-practical dichotomy. However, given two individuals of the same general intelligence, one may be relatively strong in one direction, one in the other, though the majority tend to be near average in both. In much the same way, given two children of the same weight, one may be taller, the other shorter and fatter; yet we could not classify all children into tall and fat types.

The most representative tests of verbal ability are vocabulary and comprehension. Either the Terman-Merrill or Wechsler oral vocabulary or (with literate persons) the familiar test with items like:

Hazardous means: careful, complicated, impudent, risky

give an extremely far-reaching indication of ability for any educational course or vocation

involving verbal understanding. Tests of comprehension of the ideas in orally presented or printed passages provide a useful supplement. We will come back to sub-divisions of verbal and intellectual abilities later.

Practical abilities seem to be more loosely linked, particularly those involving bodily skills. Thus, it is rather dangerous to assume that the boy who is 'handy' in making model aeroplanes will be good at drawing, or engineering, or athletics, etc., though there is some such positive correlation. Three important sub-clusters can be distinguished:

1. Spatial judgment, which enters into difficult performance tests such as Kohs Blocks, and into printed tests which involve imagining shapes turned around or over.
2. Mechanical-technical information about tools, materials, mechanisms, electrical and other gadgets. What we refer to as mechanical aptitude is largely a combination of these two, i.e. comprehension of how mechanical parts interplay plus knowledge or experience. Thus, tests of these abilities are of considerable value in picking engineering apprentices and technical school boys.
3. Physical-athletic; the well-developed, fit, athletic person tends to be good at all such activities, though one can also find sub-types who are specially good, or poor, at running performances, throwing or other kinds of performances.

In contrast with gross bodily skills, little consistency can be found in manual ones.* Many tests of manual dexterity, speed, hand-eye co-ordination, reaction time, etc., have been devised, and these are sometimes useful in selecting for particular jobs (e.g. aircraft pilots, machine operators). But in general there is so little relation between one kind of skill and another that they are of practically no use for vocational guidance purposes.

As might be expected, girls tend to be inferior to boys on most of this group of abilities, though there is much overlapping, roughly one-quarter of girls surpassing the average boy; and in a few industrial skills involving fine manual dexterity, females are quicker and more accurate. More often they are superior in linguistic skills and in memorizing capacities, while somewhat less good in reasoning (inductive) and numerical capacities.

Other Verbal Capacities

To some extent distinguishable from verbal comprehension (vocabulary) is verbal fluency, or quickness and wealth of associations. Several types can be measured by appropriate tests:

1. Word fluency—producing words with certain formal characteristics, regardless of meaning. E.g.:
   Write as many words in two minutes as possible, beginning with P, or ending with -tion.
2. Ideational fluency. E.g.:
   Write down as many round things, or blue things, or names of animals, as you can. What can you see in this ink-blot? Write down any ideas that come to mind in connection with a railway journey, a parcel (scored by number of items, not quality).

*The most comprehensive and recent work in this area is that of Fleishman and Hempel in America.

3. Expressional fluency in writing English compositions or other connected matter is rather different again. Perhaps an even more marked contrast occurs between these various written tests and:

4. Oral fluency; e.g. number of words produced in three minutes in describing a picture orally.

No. 2, and probably still more No. 4, seem to be connected to some extent with extraverted temperament, the introvert being characteristically tongue-tied.

Another fairly clear-cut ability has been called Perceptual Speed, that is, quickness in identifying or matching verbal (or non-verbal) patterns; and this is important in clerical aptitude among school-leavers and adults. Thus, a long list of pairs of names and addresses may be presented, and the subject crosses those in which the second member of a pair differs from the first:

Mrs. Rosalind Jones, 30 Northumberland Avenue, Prestwich	✓	*Mrs. Rosalind Jones, 30 Northumberland Avenue, Prestwich*
Inman & King Ltd., Beaver Lane, Northampton	×	*Inman & King Ltd., Beever Lane, Northampton*
Messrs. Burnham and Sons, Hasleton, Staffs.	✓	*Messrs. Burnham and Sons, Hasleton, Staffs.*

Similar tests may be composed of figures or pictures; and other clerical tests involve rapid classification of articles under headings (foods, clothing, hardware, etc.), or putting place names in alphabetical order.

This raises the question—are some people mentally quick, others more slow but sure? Though this is a common belief among parents and teachers, it is largely fallacious. The child who does best on timed intelligence and attainment tests, like those issued by Moray House or the National Foundation, would usually be near the top also if the tests were less speeded. The slow plodder is more likely to be generally dull and incapable than sure or ' profound '. Suppose, however, we apply more strongly contrasted tests. In a test composed of very difficult problems, given with no time limit, success will depend considerably on the child's persistence and willingness to go on trying, as well as on his ability. Whereas in very easy tests requiring little mental effort, and scored simply by number of items completed in a limited time, we can find some individuals who sacrifice accuracy to speed, and vice versa. In other words, certain temperamental tendencies or work-preferences may come into operation under such conditions. Yet these are of little value to the tester, since they tend to be rather specific. The child who shows most persistence at problems in an intelligence test will not necessarily show greater persistence at school work or a job. Another difficulty is that, for most courses or careers, quick as well as accurate or persistent ability is needed. Thus, it seems that, for most purposes, our present tests which involve both aspects, are likely to be more suitable than tests which attempt to separate them. Admittedly, however, this is a complex question, and further investigation is needed. It is possible that our 11+ tests may lay a somewhat undue emphasis on speed, and that the Terman-Merrill test may derive advantages from the fact that children give most of their answers at their own natural rate.

Scholastic Abilities

Despite the high correlations between vocabulary or other measures of verbal ability and school attainments, the latter certainly involve additional components.

Particularly, they depend on personality qualities and interests, which Alexander has labelled the *X* factor; though this is a little misleading, since *X* cannot be measured separately and it involves, not merely the person's own traits, but also the goodness of his teaching, the morale of the school, the encouragement and help he gets at home, and indeed all the conditions that Burt and Schonell have studied so fully in their work on educational backwardness. Similarly, Dale has discussed the numerous personality and environmental conditions which affect the success of university students. Clearly, one of the main tasks of the educational or clinical psychologist is to break down, explore and try to remedy deficiencies in *X*.

Over and above these components of all school work, we find specialised abilities which categorise along school-subject lines, though they are perhaps less marked and less consistent from year to year than many teachers believe. (For example, a pupil may show marked success in, say, Geography, not so much because of a special aptitude as because he has good verbal ability and happens to 'click' with the teacher; and this success may or may not persist in subsequent years.)

The mechanical aspects of reading—enunciation and speed—often differ from silent reading or comprehension (though one must also be careful not to confuse mere differences in the published norms, or lack of reliability of the test employed, with real discrepances in attainment). It is more doubtful how far components of reading skill such as visual recognition, auditory memory, etc., can usefully be distinguished. To say that a child is word blind, or that he shows a reversal tendency, and so on, may convey no more information than that he is backward in reading; and many apparent strengths and weaknesses may arise merely from the particular methods of teaching adopted by the school or the home. However, further work with such varied tests as, say, Daniels and Diack provide, may yield fruitful diagnostic indications.

Spelling is often distinctively good or poor, and ability in English usage, though usually closely linked to vocabulary, fluency and spelling, shows some differentiation. We often talk of an aptitude for learning foreign languages, but the only evidence for it seems to be observation of exceptional cases. Thus, capacity for learning French is at present best predicted by English attainment + verbal intelligence, and for learning further languages by success at French. No tests of auditory or other capacities apparently involved in language have shown any value. Much the same holds with history, literature and other verbal subjects: pupils' interests and attitudes to these vary widely and a few achieve greater or lesser success than would be expected from their general verbal-scholastic attainment, but little or no progress has been made in isolating distinctive underlying abilities.

Mathematical and scientific capacities are rather different, as we will see below; and so are artistic and musical talents. Interests, and executive skills, in these latter fields obviously bear little relation to intelligence, though there is still some positive tendency. Wealth of information about them depends much more strongly on general verbal ability. Taste and appreciation can also be measured. For example, pairs of pictures or reproductions of objects of good and poor design (as assessed by art experts) are shown for the testee to express his preference. Or specimens of good art are presented along with versions distorted in various ways. The same can be done with musical

excerpts, or poems. It is not clear how far there is a general 'taste factor' in all the arts, how far distinctive types, nor whether literary judgment contributes much to the writing of good English prose or poetry. We do know, however, that artistic and musical abilities depend but little on sensory—visual or auditory—capacities. Though a violinist or singer obviously requires a good 'sense of pitch', tests which merely measure the capacity for distinguishing sounds very close together, and other such elementary aptitudes, have little value in selecting the musically talented (as Dr. Wing has shown). The 'musical faculty' is much better invoked by tests calling for perception and memory of relations between musical tones. In drawing, the spatial ability, mentioned above, seems to have some relevance.

English writing is highly complex; it involves intelligence, verbal ability, usage and spelling, probably fluency, not to speak of handwriting—the speed and quality of which constitute further distinctive abilities. But over and above these there seems to be the capacity to integrate into a meaningful, interesting and original whole, which is all the more difficult to study because of the notorious unreliability of essay marking. Nevertheless, there is considerable evidence that assessments at 11 (when this quality is only beginning to emerge) contributes to the prediction of English attainment several years later, beyond what can be measured by objective tests.

Recently, there has been some progress in the measurement of originality, creativeness, resourcefulness or inventiveness, and this may well be relevant to English writing. Among the tests employed by Guilford are:

> Consequences: *Suppose everyone in the world suddenly doubled in height, write down as many consequences as possible that would follow.* Responses are assessed for aptness and scored for unusualness.
> Unusual Uses. *Write down unusual uses for a newspaper (e.g. lighting a fire), a brick, etc.*

Other tests being tried by a student of the writer in a current research include answering arithmetic problems by short-cuts, making up several solutions to problems based on matchsticks, and quality of answers in ideational fluency tests (see above). There seems to be a distinguishable factor running through such tests, in intelligent adults at least, which is of interest because it does *not* correlate highly with capacity at multiple-choice tests (where the testee has to pick the answer fixed beforehand by the tester, instead of providing his own); also because it seems to be associated with certain personality traits such as rebelliousness, self-sufficiency, introversion and intolerance of conventions.

The work we have described could not, of course, be expected to take us far in understanding the nature of genius, nor of such exceptional cases as the calculating or the musical prodigy. But even if it provides only a broad systematization of the normal range of ability variations, it can be of great value in guidance and selection.

Little has been said of speech abilities, apart from vocabulary and oral fluency, though they are of obvious importance, particularly to the teacher of young children, and to the trainer of teachers. It is a difficult field in which to generalize, both because observation must be individual whereas the factorist has to work with large numbers,

and because objective tests of clarity, dynamics, pronunciation, etc., are hard to come by. Dramatic talent would be another fruitful field for further research.

Mathematical and Scientific Abilities

In the primary school, arithmetical capacity can certainly be distinguished from verbal, though it forms part of the general educational cluster: more pupils are good at both numerical and verbal work, or bad at both, than good at one, bad at the other. Both at this level, and among average or dull adults, it contrasts strongly with the spatial-mechanical cluster. In the secondary school, however, it tends to move across and link more closely with the spatial-mechanical side, less so with the verbal, to give us mathematical, technical and scientific abilities. These all have much in common, and they are more closely related to inductive reasoning and non-verbal intelligence than to the ordinary verbal test. Incidentally, we are probably biasing our secondary school selection to some extent *against* potential grammar school and university scientists by giving such high weight to verbal tests and primary teachers' estimates.

Each branch of science or mathematics develops its own, partially separate, ability; biology provides an obvious example. In arithmetic, the outstanding component is simple mechanical facility with number operations. Problem or reasoning arithmetic is very much more a matter of general intelligence. Geometry is, to some extent, distinguished from arithmetic and algebra by a small but definite spatial ability component.

Memory and Attention

These two faculties are beloved of teachers, but viewed much more critically by psychologists on the grounds that they do not appear to operate as consistent and distinguishable abilities. It is surely obvious that a boy may have an excellent memory for football scores, and a very poor one for spellings and tables; or that a girl who is inattentive in class may concentrate intensively for long periods on her dolls. Nevertheless, there are some who are generally quick at learning, and good at retaining, meaningful material—i.e. material that depends on understanding rather than pure drill. And this capacity, it would seem, is largely identifiable with intelligence + interest. In other words, it is much the same as general educational ability, and not an independent capacity at all. Rote learning, however, *is* rather different, though it is by no means unitary; people do not usually have good or poor memories in general. Not only may it depend on the type of subject matter, but on the structure (e.g. poetry differs from spelling lists), and on the method of assessment (speed of learning, slowness of forgetting, etc.). 'Span' memory, as in the Binet digit and sentence memory items, is different again. Thurstone described, and provided tests for, a rote memory factor; but this refers mainly to tests of associating pairs of words, syllables or shapes, and it has not been found to have any relevance to school learning, except in so far as it involves *g* and verbal ability.

In the past, much has been written on types of imagery, with the implication that those who think or recall mainly in visual, verbal, or other modes, will show differing talents, or will require to be taught differently. It is true that, in answers to questionnaires or in introspective experiments, such differences emerge; but they tend to be inconsistent

under different conditions, and no reliable means of assessing them by any objective test can be found. Nor, indeed, does there seem to be any evidence that they possess any practical educational or vocational significance.

'Attention' is equally intractable. Some ingenious tests have been devised which appear to require considerable concentration. For example, lists of mixed letters and numbers are read out:

7 P X 4 9 5 B G 3 L

At the end of each, the testee has to write down the numbers only. Such tests do show some degree of correlation over and above their *g*-content; that is, they yield a distinct group factor; but again there is an absence of evidence that this is the same attentiveness that teachers look for. We would not, of course, deny the existence of differences between children in attention, but it is probable that these derive largely, if not wholly, from differences in:

1. Mental Age.
2. The interest of the child in the particular school lesson.
3. The teacher's capacity to motivate him.
4. His emotional stability, persistence and, possibly, state of health and fatigue.

It will be recognized that Nos. 2, 3 and 4 are much the same as our *X* factor over again.

Reasoning Abilities

A great deal of work has been done in America on varieties of reasoning, planning, grasping relations, etc., particularly at college student level. But the results of different factorists appear to be quite inconsistent, partly because they dislike admitting that all these capacities consist very largely of general intelligence, and that only minor additional group factors are likely to be distinguishable. According to a number of experiments in this country, the most fruitful of these minor types of ability seem to be:

1. Inductive reasoning or abstracting a general principle or pattern from a series of examples, as in the following:

   2 5 7 10 12 15..... What numbers come next?
   ABXCB DEXFE GHXIH..... What letters come next?
   bored roe sweet ewe rides die crate..... What word comes next?

   The well-known Raven Progressive Matrices Test measures much the same ability (plus a small spatial component), and there is considerable overlapping with arithmetical reasoning. Thus, these tests of *g* with an inductive-reasoning 'flavour' are likely to be particularly useful in predicting scientific aptitudes.

2. Deductive ability, as shown in many reasoning problems, and particularly in logical syllogisms, which depend on the application of a given pattern of premises, e.g.:

   John is sitting on the right of Peter, but he is on the left of Bill. Which is sitting on the right hand, John, Peter or Bill?

   All SEGS are SEMS. Some TETEs are SEGS. What follows? Some, All, No TETS are SEMS.

3. Flexibility in concept-formation, as in the Binet ' similarities ' item:
In what way are snake, cow and sparrow alike?

Alternatively, a number of figures or shapes may be given, for the testee to recognise the common feature. Even more revealing are sets of items which can be classified in two or more ways, for example, blocks which differ in colour, height, cross-section, etc. Some individuals who recognise one mode of classification cannot readily switch to another.

Tests of this kind are employed particularly by clinical psychologists working in mental hospitals, who find certain types of patient (brain-injured, seniles, schizophrenics) more handicapped at these than they are in conventional intelligence tests which involve the application of more routine modes of thinking. R. B. Cattell has suggested distinguishing ' fluid ' from ' crystallized ' ability in adults, the latter being measured by such tests as vocabulary, information and mental arithmetic which depend more on the level of ability reached in the past than on present capacity to tackle new concept-formation. Wechsler's scales of individual tests are similarly classified as tests which ' don't hold ' or ' hold ' with mental deterioration. Maybe the distinction reduces to much the same as the distinction between *g* and verbal-educational ability, or this kind of flexibility may correspond with the originality factor referred to above. But it may be an important quality among normal adolescents as well as abnormal adults; for example, K. Lovell has shown that relatively well-adjusted youths in their 'teens who continue to keep their minds alert through attending a stimulating school or some form of further education, are superior in this type of ability to those who are less adjusted, or who reject intellectual stimulation, the difference *not* being attributable to differences in *g* or educational attainment as such.

In conclusion, we must not give the impression that this picture or map of distinguishable abilities is a complete or final one. As already pointed out, there are many possible ways of classifying or sub-classifying; and many other important mental differences which we recognise in daily life, in schools or at work, may have been omitted because they are more difficult to assess, and because there is little experimental evidence either of their consistency or of their importance in guidance and selection. Instead of criticizing the list because it omits, say, imagination, wisdom and judgment, intuition, rationality, orientation, or a host of other possibilities, it would be more useful if readers would help to provide such evidence.

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SOCIAL LEARNING AND ITS MEASUREMENT

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Introduction

THE adult who is socially mature is not hard to recognise. He has achieved independence from his parents, he has found security in friendships among his contemporaries, he has made an adjustment to accepted customs and conventions, he has settled upon a stable sexual pattern, most commonly in monogomous marriage, and he has found work that satisfies him. With regard to the child, we implicitly accept that there are some developmental standards or norms for social maturity just as there are for physical, emotional or intellectual maturity. Thus, whether as parents or teachers, we say to the six-year-old " you are old enough to come to school by yourself," or to the eight-year-old, " you ought to be able to tell the time," or to the ten-year-old, " most boys of your age run errands for their mother." Whenever we say to a child " you are old enough to do this for yourself," we give recognition to the fact that increasing responsibilities and independence accompany social growth. Awareness of the " social ages of man " is as old as literature and as new as science. In *As You Like It*, Shakespeare poetically describes man's seven ages, while during this century many attempts have been made at more formal definitions of the successive stages of social growth, from the utter dependence of babyhood to the independence of the adult.

In recent years there has been increasing emphasis on the central part which social development plays in the development of the whole personality. One writer has even defined personality as " social effectiveness." Anderson & Anderson point out that in all recorded history man has struggled with two problems of social behaviour. The first is how to be an individual; how to have ideas of one's own; how to learn from one's own experience and to develop judgment based upon this experience; how to think for oneself; how to grow and develop psychologically to one's optimum. But in trying " to be oneself," one frequently makes life inconvenient for others. This is how the second problem of social behaviour arises. It lies in the struggle to reconcile individual differences in motives, values and actions. Though individuals are different, they must exercise these differences in such a way as to achieve the greatest possible harmony in social living. This second problem of achieving harmony is thus inextricably linked with the first one of individual freedom.

It can be argued that the social development of the child is basic to these twin problems of individual differences or differentiation on the one hand, and harmony or integration on the other. These concepts of differentiation and integration have been used by Toynbee in the interpretation of " The Growths of Civilisations," to account for

the successful development as well as for the arrested growth of civilisations. As he sees it the growth of civilisation is a process of differentiation and integration, the most essential criterion being an increase in self-determination.

Thus, almost every society lays down some standards defining the rights and duties of individuals; without them there could be no order or stability. One aspect of growing up involves the process of increasing conformity to the accepted cultural norm of the adult world. It is perhaps debateable to what extent the desire and struggle for individual freedom and optimum personal development is learned or innate; there is little doubt that harmony and conformity must be learned, indeed they present perhaps the very essence of social learning.

The concept of social maturity

The general concept of social maturity and the more specific one of social competence, are crucial for psychological study. Even more than on mental level or educational achievement, satisfactory emotional adjustment of a human being depends upon the adequacy with which he meets the growth tasks set by the culture and by the group in which he finds himself. Educational attainment can itself be viewed as a social task, at least for school children, though it is neither the only nor even the most important one. In a rough and ready way we compare the social growth of children, when, for example, we say that " Mary is old for her age " or " John seems socially immature." A more objective analysis and evaluation of the way in which a boy or girl is conforming to the social growth tasks set by his culture and his society would be of fundamental importance in the class room, the Juvenile Court, the workshop and the community at large. A promising empirical beginning might be made in the field of " social maturity " or " social competence " in terms of sampling the social achievements demanded by a particular society. A thorough analysis of causative factors can at present be approached only subjectively, inferentially and imperfectly. Attempts at measurement should clear the way for a closer study of the extent to which environmental modifications can influence social development.

At once we are beset with problems of definition. Terms such as " socialisation," " social maturity," " anti-social traits," are frequently found in educational and psychological discussion: public schools pride themselves on giving " social training "; delinquents are said to be " socially immature "; how pre-school children " learn social participation " has been studied in detail. But still definition is lacking. No doubt, one reason for this is that standards of social behaviour differ not only from one society to another, but even from one social class to another in the same society. Anthropologists, notably Benedict and Mead, have shown how a form of social behaviour, despised in one culture, may be prized in another. Since cultural norms vary widely from society to society, meaningful generalisations cannot readily be made. However, despite these difficulties, some attempt at definition must be made to clarify the concept of social maturity. The following tentative definition has been suggested by the author elsewhere:

> Social maturity is manifested by the extent to which an individual is able and willing to coform to the customs, habits and standards of behaviour prevailing

in the society in which he lives; by the degree to which he is able to do so independently of direction and guidance; and by the extent to which he participates constructively in the affairs and conduct of his community.

Of course, this definition is mainly descriptive and begs fundamental questions both as to causes and as to their interaction. Moreover, it could be argued that acceptance of and conformity to the prevailing customs, habits and standards may not be desirable if the particular society happens to be over-materialistic, corrupt or degenerate. However, such argument would lead into moral and philosophical realms outside the scope of this discussion.

Determinants of Social Maturity

Genetic and hereditary factors. An individual's ability to conform to the standards laid down by his society depends upon genetic, hereditary, maturational and environmental factors. It is probably safe to assume that genetically children are equipped for social participation and social adaptation. Hereditary components may also influence the development of social maturity. This is a possible hypothesis in cases of delayed social maturation such as is found in some problem children, juvenile delinquents and adult criminals. Their inability to conform to standards of conduct expected by society may spring from some hereditary defect or weakness, limiting their capacity for attaining social maturity. This view is advanced by Doll, who suggests that social maturity is distributed in a way similar to that of intelligence. He investigated a series of families and printed genealogical trees for four generations, showing that in some families social maturity never reached a normal level, while in others it was always above average. In Doll's opinion, this is evidence that heredity plays a part in the development of social maturity and that in some cases social defect may be inherited. At present this theory seems rather speculative; it would be safer to assume that there may be disturbing or inhibiting factors in the emotional or intellectual life of the child or adult which account for inadequate social learning and a lower than expected level of social conformity.

Maturation. " Maturation " refers to those changes in bodily or mental structure which mainly come about through growth. The connection between maturational factors on the one hand, and genetic and hereditary factors on the other, is, of course, close, since maturational rates and final levels achieved depend largely on these latter factors. At the same time, in all forms of learning certain growth stages have to be reached before specific functions can be acquired. In the development of social competence, as in educational progress, certain levels of maturation are pre-requisites though not necessarily causative. For example, by fostering physical development, we can assure that a child is not prevented or inhibited from learning social participation in games at the appropriate age. But this by itself will not ensure that he will be willing to do so.

Intellectual growth is another pre-requisite to social development. But maturation of inborn, intellectual ability is not the same as maturity of mind, which depends to a greater extent on social and emotional maturation. Thus, the development of physical and intellectual readiness does not ensure either willingness or ability to adapt socially. This depends largely upon maturation in the emotional life. Indeed, some writers, such

as Bowley, consider that from the very first stage of babyhood, social development is closely related to emotional development, proceeding from the intimate family circle outwards to ever-widening social spheres. Here we can see the link between environmental factors and learning ability since without such ability the child will fail to appreciate his developing role and responsibilities as a member of the family and later of other social groups.

Environmental factors and social learning. Social learning begins within the family, and the first social contact is that between mother and child. In feeding, the first step is taken from a purely physiological need to an acquired habit, which will become increasingly " socialised," i.e. from sucking the nipple or teat, to the elaborate etiquette governing " feeding habits " at a state banquet. In the dependency relationship of the child to the mother, later to the father, and then to other people, is to be seen the primary socialising pattern, the task of learning to become a human being. The baby is born only with the potentiality to become a person and has to be taught to become human. That the emotional and social attributes of personality are a function of living in a human society, is demonstrated clearly by two phenomena: firstly, by the distortion in the development of children born without the necessary sense organs to perceive, communicate and thus interact with their environment, such as the deaf-blind; of these, Helen Keller is the most famous example because she is one of the very few who have successfully broken through the immense barrier to social learning imposed by this dual handicap. Secondly, children who by some chance or mishap have been isolated from normal human contact during early infancy, show a complete lack of those characteristics which we regard as specifically human, i.e. speech, emotional control and social skills (for example, the case of Anna described by Kingsley Davis).

Within the family circle, the child is introduced to a world that has regularity and predictability. Maternal approval and disapproval are the main devices for training and teaching the very young. Mothering, to begin with, ensures the sheer survival of the baby but the complete indulgence of all his wants is changed gradually into a series of regulatory pressures or demands. By withholding or granting adult approval and co-operation, the parent has constantly at his command a device for selectively rewarding (by responding to) those new, more mature responses which make their appearance. Without the capacity for learning, the helpless infant could not become a socially mature adult; the group, in the first instance the family, has the important function of transmitting the social heritage to the maturing child. As he grows up, an increasing number of groups continue this task: the adults and children in the neighbourhood, his classmates at school, members of any club he may belong to, and later his workmates, as well as the various mass media of communication (such as the press, radio, T.V. and the cinema) increasingly familiarise him with the customs and standards of his culture.

How important these group influences are, is shown not only by studies of different cultures but also, and perhaps as strikingly, by differences which exist between social groups even in our own culture. The farm labourer's son will acquire skills which the surgeon's son of the same age does not need and may even despise. Their speech, standard of personal hygiene, spare time occupations and interests, will all reflect social differences in their home and neighbourhood setting. Other examples, within the

experiences of many teachers are neglected children in slum areas who are a-social, if not anti-social, because throughout their lives they have lacked adequate social training.

The social learning of deviant children. The study of exceptional children throws into relief the fact that the relationships so far discussed, are more subtle and complex than at first appears. It seems possible, for example, that an unusually high level of intellectual maturity may prevent or make more difficult a commensurate degree of social maturity. Terman and Burke point out that precocity unavoidably complicates the problem of social adjustment. For example, the ten-year-old with an I.Q. of 150 can hardly be expected to function socially at the fifteen-year-old level. Yet his high ability will inevitably mark him off to some extent from his less gifted contemporaries, while their social mores may well strike him as unacceptably childish. Thus, socially, he may constitute as much of a problem as the exceptionally dull child. The difficulties of the latter lie in the fact that severely sub-normal intelligence limits the pace and range of learning. Thus, it will also hinder learning in social situations. Consequently, the very slow learning child finds himself at a disadvantage among his contemporaries not merely educationally but socially as well, since he has not yet mastered the social conventions of his peers.

Nevertheless, it is known that certain types of mentally handicapped children, such as mongols, achieve a comparatively high degree of social adaptation; many learn to dress themselves, to help with simple household tasks, are sociable and easy to manage. However, this level of social conformity is reached mainly through their marked imitativeness. Failure is conspicuous in the second and third categories of the definition given above: throughout their lives, most mongols require guidance and remain unable to participate constructively in the affairs of their community.

Physically handicapped children will also be inevitably circumscribed to a greater or lesser degree depending on the nature and severity of their disability. For example, the severely cerebral palsied are unable to conform even outwardly with regard to such comparatively simple skills as eating habits. Even if they possess the necessary intellectual equipment for attaining full social maturity, physical limitations deny them such achievement. If he attends a special school the handicapped child finds himself in a sheltered community designed to meet his needs. There he can feel safe, accepted and not so very much different from his fellows. But eventually he must once again face the outside world unless he is to spend his life in a residential institution of some kind. Perhaps the basic educational aim with handicapped pupils should be to prepare them to live with some measure of social usefulness and a sense of social participation. An example of how this can be achieved can be seen at Condover Hall School for blind, educationally sub-normal children. Because normality and conformity are highly prized in our society, handicapped children are faced with a severe problem of social and emotional adjustment. Yet many handicapped adults, because of outstanding emotional stability, perseverance and determination, achieve an unexpected measure of social adaptation despite their disabilities.

Special problems of social adaptation have to be met by another group, namely, those who spend the major part of their childhood in residential care. It is not easy in a large children's home to provide the same range of opportunities, both of a formal and an

informal kind, which give rise to social learning in the everyday lives of children living with their own families. This is well-recognised nowadays by those concerned with children in care, but practical achievement is made extremely difficult chiefly because of an acute shortage of suitable staff.

Lastly, the maladjusted child is often characterised by marked emotional immaturity and this goes frequently hand in hand with inadequate social learning and a low level of social conformity. Though intelligent and with apparently sufficient opportunities for social learning, many neurotic children and adults show failures in social adaptation, such as over-dependence, uncontrolled aggressiveness, an inability to mix, and so on. On the other hand, precocious emotional development—often under the impact of stress at home or conflict in the child—may similarly, though perhaps more rarely, impede the development of adequate social adaptation.

Social Maturity—A Measurable Entity?

Any attempt to measure social maturity raises two questions: firstly, is there a real progression in the level of social maturity independent of intelligence? Secondly, if the answer to this is affirmative, are there sufficient tasks, at different maturational levels, to make possible the construction of a scale extending from birth to maturity? With increasing age children are faced with an ever-increasing complexity of demands and expectations, and this is clearly shown by numerous developmental studies. Though none of these aim directly at a scale measuring general development, most of them provide an outline of progressive general development and suggest norms in the physical and intellectual, as well as in the social sphere.

During the pre-school years comparatively simple and uniform demands are made. During the middle years of childhood, from five to eleven years, most children are exposed to more or less uniform social pressure, though some variation is beginning to show. The start of compulsory schooling and the transition to the Junior School two years later, present focal points for new social adjustments. Educational difficulties also become apparent during this stage, particularly in reading, and failure may have far-reaching effects upon social and emotional development. From the age of eleven years onwards, there is increasingly less uniformity of pressure and expectation. In addition to differences in educational environment, there is during the 'teens an increased widening of abilities, interests and responsibilities; this carries with it a greater variety (and thus choice) of tasks as well as an increased chance of failure. All these changing conditions are likely to give rise to more marked differences in social development.

It seems, therefore, that up to the age of about eleven years there is sufficient uniformity of pressure and expectation to make possible the construction of norms of social development which are largely independent of social group and applicable at least within this country. Thereafter the sampling may well have to be wider and the alternatives more numerous to allow for increasing differences in educational and other environmental opportunities. For the purposes of measurement it would be necessary to sub-divide the concept of social maturity into various aspects such as social competence, social knowledge, independence, foresight and so on. Of these, social competence is likely to be most readily measured. By this term is meant the ability to carry out social tasks

normally achieved by children of a given age as there are some fields in which all children are expected to reach eventually certain minimum standards. Examples of such fields are habits of eating, cleanliness, dressing, the attainment of personal and economic independence.

Thus, social maturity may be assessed by the competence which an individual shows in performing " social tasks " at various levels. Such social competence might be regarded as one aspect of social maturity. Clearly, it is an important one and of the same order as acquiring educational skills. Just as reading is an artefact of the environment, so is the form in which social competence finds expression. It is a learned response and must be assessed both in terms of capacity to respond and of actual level reached. Educational attainment gives an indication of how a child is meeting the relatively controlled and structured demands of school. Social competence will indicate the extent to which a child is meeting the less controlled and structured demands of the ever-widening social group with which increasing age brings him into contact.

So far, few attempts have been made at objective measurement. Various methods used in studies of child development are suggestive, such as systematic observations, the case history or clinical approach, standard situation tests, ratings and developmental schedules. These, however, yield qualitative rather than quantitative data. Moreover, most investigations have concentrated upon the pre-school years. What seems to be needed is a scale or measuring instrument which permits quantitative comparisons in social competence from birth to adulthood and which allows such measurement in a brief period of time.

Doll's *Vineland Social Maturity Scale* is a first attempt at measurement of this kind. In spite of Vernon's view that it merits " very thorough examination," it has received only limited attention in this country. Originally the scale was devised to measure the social abilities of children suspected of mental deficiency. It is interesting to note in passing that when Binet, in 1901, devised his individual scale for testing intelligence he aimed at solving a similar practical problem, namely, the setting up of objective criteria for determining intellectual defect in pupils of the Paris schools. Doll's scale is based on an interview, with the subject himself or with someone thoroughly familiar with the child's habitual behaviour. Simple, concrete information is asked for regarding the child's responses in a variety of social situations occurring in everyday life. There is one major weakness in the construction of the scale to which Doll himself draws attention: at the lower age ranges, behaviour is sampled fully and extensively; but later years, especially adolescence and adulthood, are inadequately covered. This is probably due to the fact that with increasing age it becomes progressively more difficult to eliminate the influence of such variables as sex, education, opportunity, intelligence and motivation.

Research Results

In what follows the voluminous American work with the Vineland Scale will be very briefly reviewed; then studies reported in this country will be discussed in greater detail.

Growth rates and developmental periods. There are several studies in each of these fields. Annual re-examinations were carried out by Doll both of normal and mentally handicapped children. There appeared to be marked individual differences in rates of growth

in social competence; usually growth after the age of twenty-five years was negligible which confirmed the author in his view that this age is the normative average ceiling. With the mentally handicapped, longitudinal studies using the scale were found to be of value in confirming early diagnosis and in giving guidance to parents and institution staffs. A further validation of the scale has been found in the study of twins, using identical and non-identical twins as well as subjects of normal and sub-normal intelligence.

In various studies concerning pre-school children the scale has been found practicable and helpful. The results were used in the treatment of parent-child relations, in the analysis of infant behaviour problems and in parent education generally.

Socio-economic level. Evidence here is somewhat conflicting. According to most studies, differences in environment seem to play a relatively minor part provided the subjects belong to the same culture. In one study, however, significant differences in social competence were found between children who come respectively from rural and urban areas. At the age of five years the city children were more competent socially, while at the age of ten years the position was reversed and the rural children were superior in this respect.

For mentally sub-normal groups the correlation between parental social standing and the child's level of social competence is in fact negative. This reflects probably not so much environmental differences as the well-known tendency for very low-grade mentally handicapped children to come from superior families. Such families tend to continue the period of dependence for sub-normal children longer than is usual in culturally inferior homes.

Deprived, Maladjusted and Delinquent Children. Field studies of special groups indicate the utility of the instrument for practical as well as theoretical purposes. Investigations of children deprived of normal home life and living in residential institutions have aimed at assessing the psychological effects of such deprivation, especially for very young children. Attempts have also been made to find suitable control groups by matching institutionalised children with others placed in small foster homes.

In some long-term studies, notably the classical ones by Goldfarb, it also proved possible to observe the social development of children who were placed in foster homes following a considerable period in a residential home. It was found that initially the children in institutions seemed to be as well, if not better developed socially than those in the foster homes; for those children who were then fostered out, the situation began to change: their social competence declined whereas the group living in foster homes all the time continued to progress normally. This phenomenon suggests that when the support of the institution routine was removed, the thin shell of social maturity collapsed; the children regressed then to more infantile and dependent behaviour, probably because of the early lack of personal affection.

Studies of maladjusted children of varying levels of intelligence and with a wide variety of emotional problems show that treatment can be made more effective by having available an assessment of the children's level of social competence. At the same time it was found that neither social age nor the relationship between intelligence and social quotient provide a basis for making a prognosis regarding the type of problem behaviour likely to be shown by a particular maladjusted child.

Applying the scale to juvenile delinquents, Doll and his collaborators found that the typical delinquent is socially inadequate and irresponsible. Marked retardation in social competence was found in comparison with age and level of intelligence.

Handicapped Children. Studies of deaf, blind, epileptic and physically handicapped children have suggested the ways in which a particular handicap affects the development of social competence. In addition, through the retrospective use of the scale, records may be obtained to plot the course of improvement or deterioration in a child's social learning. Cumulative growth rates indicate the general trend of progress or retrogression.

Lastly, the results of the scale have been valuable in deciding upon the most appropriate placement for a child; whether, for example, he will do best living at home and being given work assignments there, or whether he can daily go out to a protected workshop or whether institutional life would best meet his needs.

The greatest use of the scale in the United States has undoubtedly been with mentally handicapped children and adults. Indeed, Doll believes social competence levels can be used as differential criteria for conditions of slight, severe and extremely severe conditions of mental sub-normality. Thus, the scale is of great practical value not only in deciding on the most suitable education and placement of the mentally handicapped, but also in planning suitable training programmes and evaluating their long-term effects. In fact, it appears that social age provides a more effective basis of classification for purposes of education, training or care than does mental age. It is claimed that the scale has demonstrated its ability to differentiate between true mental defectives who are socially inadequate and those who are merely of sub-normal intellect but quite competent in managing their personal and social lives.

Studies in this country

Normal children. To assess the validity of the Vineland Scale and its applicability in this country, an intensive study of 250 cases was undertaken by Kellmer Pringle. Among the main variables were intelligence, educational level, personal adjustment and parental socio-economic status. The age range of the children was from six to eight years. Each child was individually interviewed and for forty children a home visit was also paid. To investigate the influence of the socio-economic and cultural background on social development, the children were chosen from four areas differing widely in this respect (namely, a rural, a metropolitan, a working class and a professional area). A very detailed study of those cases which showed a marked discrepancy between individually assessed intelligence and social competence was also undertaken. No sex differences were found nor were there any differences in social competence between the children from the four social areas. Yet there were significant differences both in intelligence and reading attainment. It seems that at this age level at any rate, diverse environments offer those opportunities that lead to an average development of social competence. Alternatively, at this comparatively early age social expectations may not, as yet, be sufficiently differentiated from area to area and class to class, to result in measurably different social quotients. Marked advancement or retardation in social competence compared with mental level, was found to be associated with some emotional disturbance.

Maladjusted and Delinquent Children. To illustrate the usefulness of the Scale' Bodman applied it to one hundred problem children referred for psychiatric advice. He found that despite unfavourable environments, many children had normal social quotients, but also that in some cases excessive social pressure had often resulted in undesirable behaviour patterns. The data suggested that there is less variability for social than for intelligence quotients.

In the previously mentioned study by Kellmer Pringle, a comparison was made between 200 normal children and 50 cases referred to a Child Guidance Clinic because of problem behaviour. The social maturity level of the problem group was found to be significantly lower than that of the normal sample. This suggests that emotional disturbance has an inhibiting or retarding influence on social growth. But there was also evidence that a precociously high level of social competence goes hand in hand with emotional difficulties. In fact, it looks as if the child who, compared with his mental level, is markedly advanced or retarded in social competence, is likely to be emotionally disturbed. It was clear that the home influence was one of the most important causative factors in the promotion of an optimum level of social competence.

Dunsdon used the scale for studying all the juvenile delinquents who were brought before the court in one particular area during a period of five years. In every case showing a low level of social competence she found also a lower than expected level of achievement at school or at work. However, a large proportion of delinquents over 16 years of age showed comparative acceleration in social development. Dunsdon concluded that in these cases the attempt at shouldering social responsibilities without commensurate intellectual comprehension was one of the major causes of the delinquent breakdown.

Deprived Children. A study of the social adaptation of institution children was made by Bodmah, McKinlay and Sykes. They matched fifty-one children who had spent at least three years living in a residential Home with a control group brought up in their own families, and studied a number of variables, including the children's family history and their social activities. The institution children were found to be less mature socially than the control group. There was also a much higher incidence of parental instability or of mental defect in the parents of the institution group. From this the investigators concluded that social maturation was influenced at least as much by constitutional as by environmental factors.

In a study of the development and achievement of 188 deprived children living in institutional care, Kellmer Pringle and Bossio found that social competence was the only aspect in which the development of the deprived equalled that of ordinary children. This was the case for both sexes and for the three age groups making up the sample (namely, 8, 11 and 14-year-olds). These results confirmed other investigations which suggested that institutional routine involves unduly high demands for social independence and thus tends to produce precocious but rather precarious social development.

In a comparative study of a very stable and a severely maladjusted group of children in care, Kellmer Pringle and Bossio found the latter group to be rather less mature socially. In addition the maladjusted group tended to show from time to time regressive tendencies in social behaviour both in the Home and at school.

Conclusions

Attempts to measure the social aspects of human growth are as yet only in the beginning stages and our knowledge of norms of social development is still inadequate. Doll's *Vineland Social Maturity Scale* is an instrument which makes measurement possible in at least one area. In a field where concepts are misty and ill-defined, it must be regarded as a valuable first approach towards clarification of theoretical notions and towards the practical possibility of quantification. At the same time it need be stressed that the scale should still be regarded as experimental. It was devised by a clinician for the use of clinicians; its author claims that only the clinically-trained examiner can make the best use of it and avoid some of the pitfalls open before the naive or perhaps emotionally involved investigator.

There is no intrinsic reason why such a scale should not be used by teachers, probation officers, youth employment officers and the like. Before such a wider use can be advocated in this country, a number of things remain to be done. Chief among them are the expansion of the scale by increasing the number of items in each year group after the present ninth year; the standardisation of this enlarged version of the scale in England; the preparation of a manual which gives a much more detailed analysis of the behaviour required for each item than appears in the present manual so as to enable qualified teachers and social workers to use the scale successfully. At present it is perhaps of greatest value with deviant children in whose cases social competence is an issue of practical importance. Additional insight can be gained into the difficulties and needs of the mentally handicapped, the emotionally maladjusted and the delinquent child.

Whether the level of social competence can be raised for some or all children by deliberate training; whether acceleration and retardation in social development has different meaning and significance at different ages; whether it might be possible to establish borderlines for " social backwardness " and " social defect "; these and many other questions must wait upon the results of further research. But the solution of these problems may well be as important for our knowledge of social development as the experimental work of the last three decades has been for our knowledge of the maturation of intellectual growth.

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HIGHLY INTELLIGENT CHILDREN

Part II—The Education of the Gifted

W. D. WALL

The Talented

THE education of markedly talented or gifted children who may or may not be strikingly able in a general educational sense, presents a number of problems and the nature of these is likely to change from childhood to adolescence and from adolescence to young adulthood. Very specific gifts of marked degree—such as mathematical or musical ability, the writing of poetry, marked skill in drawing or painting—may declare themselves early and in a pronounced fashion. Sometimes such precocity is, indeed, the sign of a permanent bent and the foundation of a future career. However, it is difficult to be sure; and the special talent may in fact be a somewhat one-sided manifestation of high general ability brought about by an immediate but possibly transient interest; or it may be due to identification with the interests of a loved adult; or it may in fact be a reaction, as when an able child feels that he cannot compete with a musical family and devotes himself to another art where he may shine alone. Some apparently marked talent seems to fade at adolescence and never reappear; some special capacities do not declare themselves until the 'teens. High general intelligence on the other hand, as we have seen, tends to be fairly constant; the able child becomes the able adolescent and adult; only rarely, and then usually for reasons to be traced to emotional problems, does intellectual brilliance fade.

There is thus the problem of guidance posed in a peculiarly acute form. High general ability needs to be " fed," talent should also be trained. There is always the quite serious risk that if an apparent special talent is in fact a transitory expression of high general ability and if special steps are taken to train it, the child may miss more general opportunities; he may also find that his gift fades, but at a stage too late for him readily to change direction. This is least likely to occur in fields like mathematics, closely related to the general curriculum and most likely to occur in such things as music, singing and the dance. The matter is complicated by the fact that the full development of some talents—notably executive skill with certain musical instruments—demands an early and fairly intensive training before the bones and muscles are set.

Even more subtle and difficult to unravel in each individual case are the effects which a supposed special talent, and the special education and expectations that may go with it, may exert upon personality. Here one may think of children from their childhood brought up to dance or to a theatrical career—but who subsequently turn out not to be superlatively gifted in their chosen field.

In most developed countries, schools exist, at least at the secondary stage, which have a bias towards a particular art, usually music and singing, sometimes the visual arts. There are also, in most such countries, regulations which impose on children concerned with the stage as performers or learners, the obligation also to follow a full general education, although this may well be specially adapted to the circumstances imposed by the profession they wish to follow. Historically the earliest of such specialised schools were the Choir Schools, the main purpose of which was to train suitable boys for Cathedral Choirs and at the same time to continue their general education.

Such choir schools in the past also were nurseries of theatrical talent and a number of Shakespeare's plays were written for boy actors attached to the choir school of St. Paul's Cathedral. So far as this country is concerned, these are perhaps the nearest thing we have to a system of special education for children with a particular talent; and for the most part today such schools take only pupils at the secondary stage who, on other grounds are considered suitable for an academic education and who are musically and vocally somewhat above average. In the U.S.S.R., there are ballet schools based upon a similar principle and one or two in other countries of Europe.

The problem has two aspects. The first of these is that of the earliest possible identification of special talent; a part of this is the differentiation between a genuinely high level of the special ability or abilities involved and the apparent talent which is in fact an expression of a combination of general ability, interest, familial influence and perhaps some considerable training already given. The second problem is that of combining a reasonable and necessary concentration upon the training and development of a particular gift with a more general education of the intelligence and the personality, so that the individual is neither deformed or narrowed nor prevented at a later stage, if his talent is not in fact truly marked, from entering some other career.

It should be said at once that we have very little exact knowledge on which to base the early detection of special talents. Though there are tests of musical aptitude like those of Wing and Seashore, and of development in drawing, painting like the " Easle Age Scale " of , these are dependent partly on the kind of opportunity the subject has already had and, so far, have not been used for long-range prediction and guidance. For the most part indeed, such guidance rests upon chance. The child with musical gifts lucky enough to be born into a musical family will probably find the early circumstances necessary for his talent to declare itself sufficiently strikingly to attract attention; a child with similar or even superior native endowment might well not meet the circumstances in which his gifts can declare themselves, at best until his 'teens and perhaps not at all. The same would certainly be true of gifts for the dance or the theatre. On the other hand, talents more in line with the demands of normal curricula, or which may declare themselves comparatively late—such, for example, as a talent for creative writing, or for mathematics, or for scientific enquiry—though they may be overlooked by the home and the school and even by the individual himself, tend to get some opportunity for expression in the ordinary course of education. The visual arts are somewhere in between. Most children draw and paint given a suitable opportunity; by and large, at least up to the age of ten or twelve, however the quality of a child's drawing indicates

more his level of general ability than his degree of special talent in the visual field. In the early 'teens, many children turn away from drawing and painting, perhaps because they are more self-critical and partly at least because the schools tend to lay less stress upon it. Later on—often as an extra-curricular activity—a number take it up again. Until twenty years or so ago, few secondary schools in this country did more than provide a few weekly lessons of drawing and painting and woodwork was almost the only craft offered. The revolution in the teaching of art means now that in very many schools opportunities are offered, both in the curriculum and as extra-curricular activity, to practice many of the other visual and plastic arts. Thus, while perhaps it could not be said that artistic ability is sought for, encouraged and actively trained in our schools, it can be claimed that, in many, the circumstances in which it can declare itself exist.

In the present state of our knowledge, probably the only reasonable recommendation that can be made is that the curricula of primary and secondary schools, particularly for the most able children, should be as rich as possible in activities which provide an introduction into the varied fields of artistic and other kinds of creative activity and that there should be in addition, a wealth of extra-curricular opportunities beyond the conventional and often stereotyped hobbies now offered. Parents need help in this respect. The cultivated and active family can nourish talent in many unobtrusive ways; but the range of activities in many families is not large. Much might be done by a school willing, through its parent-teacher association, to draw the attention of parents to the many fascinating creative occupations which can be carried on in the home.

The informal, active primary school probably provides the best chance for talents to show themselves: but the chance alone is rarely enough. It is necessary that the teacher observe the child over a considerable period to see whether any special bent is a flash in the pan, a marked interest leading to above average skill and performance, or something much more striking. It is the teacher's task to feed the interests that show themselves, to foster growth and to some large extent to direct it unobtrusively. In this, however, there are certain dangers—of forcing a talent which does not truly exist, building up the idea in a child and his parents that here is something quite out of the ordinary, and of so pressing a child forward that finally he abandons the chosen activity in disgust.

There is also the danger that a specially-chosen field—art, music, handwork, even writing, scientific experiment or mathematics—may, for the child, become a kind of defence against any reproaches which may be made to him over his only moderate success elsewhere. He may retreat, in fact, into a single excellence to avoid competition or a feared failure in general academic work. It is this which sometimes lies behind the highly specialised intellectual interests of some adolescents or their relative excellence in some art which, as well as knowledge and creativity, also demands a degree of skill which can only be attained by practice. One would rightly regard with some distrust the boy or girl who has become an " authority " on, say, Egyptology but whose work in History or Geography was mediocre or the child who, through constant practice, had become a more than competent draftsman but the content of whose drawing or painting was mediocre.

Creativity

This leads us to consider what is perhaps the most important aspect of the education of highly able children. There are relatively many more people of outstanding general intelligence than there are who are truly creative; and there are many who have talent, trained or untrained, but which is reproductive rather than creative. Creativity is, in most fields, the mark of what we call genius; and, in the solution of almost all problems other than those which have a more or less artificially preordained solution, creativity enters. Surprisingly little research has been devoted to creativity so that we know very little indeed about what it is psychologically, whether the conditions vary according to the field in which it is expressed, how it develops and how education may foster it. We may, however, hazard a few speculations. In a very real sense, creative work involves the recombination and expression of acquired knowledge and experience. For some of the creative, at least if not for all, this may mean the ability to throw up a very considerable number of ideas or solutions or imaginative combinations of ideas and experiences rapidly. For this a state of excitement is probably necessary. Among the material thus produced, there will be good, indifferent and bad. Hence there is the second aspect, that of selection —a critical and refining task. In varying degrees, it seems possible that these two operations are necessary to real creativity as it shows itself in any intellectual, artistic, scientific or social field though the way in which they manifest themselves will be very different from situation to situation and from person to person. But as well as an intellectual content, an emotional stimulus or excitement, and an acquired mastery of the vehicle of expression, there is, if creativity is to come to fruition, a series of personality variables which make possible the creative moment itself, which provide the drive and the energy necessary to carry inspiration to its embodiment in a sonnet, a picture, an epic, a lifetime of research or the steady implementation of administrative vision over decades.

Here we should pause to reflect upon the profound psychological truth in the remark —attributed, among others, to Edison—that ninety-nine per cent. of genius is hard work. What in fact this implies is that unless the mind is richly stored with experience relevant to the particular field and unless the expressional skills involved—whatever they are—have been mastered by much practice until they are virtually automatised, the mere imaginative up thrust of " inspiration " will not in fact have the content of genius nor will it find adequate expression. In a remarkable analysis of the *Ancient Mariner* and of *Khubla Khan*, Livingstone Lowes lays bare some of the mechanisms of the mind and the imagination that led Coleridge to write his two or three great poems, so unlike in imaginative and creative quality the rest of his poetic work. Lowes shows how Coleridge's reading of many travel books affected his imagination in a way that was at least partly subconscious and how, under the pressure of excitement, whole phrases emerged to colour what he wrote. A similar process can be traced in Keats, who frequently refers to it as " the magic hand of chance " both in his letters and in his verse. So, too, Caroline Spurgeon's careful analysis of the imagery used by Shakespeare points to the richness of the experiental content of the dramatist's mind. In another field, the biographies of inventors and scientists are full of examples of how a period of arduous and frustrating work, ending in fatigue and almost in despair, is suddenly crowned by a flash of insight, an insight which sometimes comes in a dream.

Thus, we may postulate that creativity is likely to result from a well-stored mind (and relatively high general intelligence is necessary for this as well as a certain fineness of perception) plus a certain " fluidity " of interchange between the conscious and unconscious or subconscious levels of thought, the possibility of a " fluency " of ideas and elements of ideas coming in rapid and varied combinations and finally the judgment necessary to reject those which are banal, irrelevant or bad and to accept and express the new.

If this is indeed so—and we should remind ourselves at this point that what has been said is speculative—then there are certain educational consequences and certain hypotheses upon which it would be valuable to undertake systematic research. The first question which might be asked is the fundamental one: does our education in fact foster creativity? Much of the work done in school at any level must be reproductive—that is, it depends upon the learning of facts and of the relations that exist between them. Examinations, of course, tend to emphasise this aspect almost exclusively. Moreover, in most of the familiar fields of the school curriculum, any creative effort of the young—or even of their teachers—is bound to be somewhat naive, bizarre or callow, since the body of acquired knowledge and thought is immense and most of the combinations of ideas and facts upon which the young could stumble have already been discovered and either accepted or eliminated. To be creative in the full sense in such fields as the natural sciences, history, geography, mathematics, requires a long and intensive apprenticeship far beyond school days. On the other hand, the visual arts, music and English do seem to permit genuine creativeness even for the young—though for its full expression an equally stern apprenticeship to the specific techniques of expression is ultimately necessary. Finally, we may ask whether in the broad field of interpersonal relationships, of the general running of the school community and its social life, pupils are helped and encouraged to learn how to express themselves creatively; and how a community may in fact " create."

Some worthwhile experiments have been made to stimulate the creativiness of children in writing and, in the hands of imaginative adults, like Marjorie Hourd and the students she trained, it is surprising what can be achieved. To the writer it seems that even more could be done if the whole educational method were intended to stimulate the twin processes of imaginative summoning up of ideas, experience and knowledge in a mood of excitement and the following of this by a careful, critical selection and rejection of what is commonplace, inapplicable or useless. Even in the learning of science and scientific method, this has its place, though, of course, there are limitations on what can be done. However, it is at least worth asking the question whether didactic teaching is not the principal means of deadening any creativity the child may possess; and whether, therefore, our use of it should be sparing and only when it is the indispensable means of covering a certain amount of ground not to be acquired in any other way.

Certain work in the United States on creativity leads us to ask yet another question. In this work, two radically different types of test were used: the one of the conventional type which requires verbal reasoning along familiar lines; the other called for richness and variety of response rather than a foreordained correctness. Children who scored high on the first type of test and comparatively low on the second proved to be the " good

scholars," the pupils who learned what they were taught rapidly and well and who gave little or no trouble to their teachers. In the judgment of their teachers their academic work was good. The children who did better on the second kind of test tended to be academically as good as the first group but were not rated as being so good by their teachers and they were much more troublesome. These results are only suggestive: but they do suggest two things—that the presuppositions of our educational system are such that they favour the intelligent conforming pupil rather than the intelligent creative one; and that possibly the inbuilt machinery of selection in our system—streaming in the primary schools, the allocation procedures, the end-of-year examinations, the G.C.E. and subsequent public examinations—may be continuously favouring conformity and at various points depriving the unconventional but intelligent child of his chances.

It should be reiterated, at this point, that this is speculative: research on creativity is in its infancy in the United States and has hardly begun here yet. What is suggested is that this is a question well worth attention and one to which the observations of teachers both at the primary and at the secondary level could be directed. In doing so, one should bear in mind the fact that the means we have of assessing intelligence are in fact largely determined by the kind of education which we give our children, especially in school, though also in the home and community. It is possible that, because we place a heavy premium on the reproduction of facts and opinions and upon the direct acquisition of skills, we overlook or even starve an equally important aspect of growth—that of fluency and vigour of imagination which, like a volcano, throws up much ash, rubbish and mud, but also precious metal. At all events, the fact that so many of the truly creative were more or less maladjusted to the kind of education they were given should give us pause.

In the identification and education of children of high general learning ability we have got much further than we have in the identification of talent and creativity and it is true to say that in this country at all events few outstandingly able children now fail to get a more or less suitable education—with the proviso that our system lays stress on the kinds of learning ability demanded by curricula which are for the most part verbal and in the later stages highly abstract and symbolic along two quite clearly defined lines—verbal symbolism and abstraction which is the principal vehicle of all education at the secondary grammar and university levels (and, indeed, even of technical education) and numerical symbolism and abstraction. Other forms of thought—musical, concrete, form and colour—though not entirely neglected occupy a much less important place, especially in the kinds of test or examination which are the sanctions of education and training.

The education of those who are outstanding because of their general educable capacity, the children who do exceptionally well in school and in the various forms of tests and examinations which we use to measure intelligence presents in many ways a less intractable series of problems—though here again, while there is much experience in European educational tradition and in the United States, there is little solid evidence as to the relative value of the practices in use.

There seem to be three principal categories of problem. The first of these is that of ensuring that the child who learns fast should not be kept waiting while his less able contemporaries catch up. At the same time, we wish to ensure that intellectual develop-

ment does not so far outstrip emotional and social growth as to produce the more unpleasant features of the stereotype of the precocious child. The second is that of avoiding the cynicism and egocentricity which may come if the intelligent child, uninhibited by experience, sees through adult compromises and if he is segregated among an *elite* from his more ordinary fellows. Put more positively, it is the problem of how a value system which emphasises service to others rather than personal advantage may be made compatible with an education which inevitably, however it is managed, sets the very able apart from their contemporaries. The third, and in some ways the most intractable problem is that of avoiding—for the very few very able children—intellectual and social isolation.

Acceleration

To solve the first of these problems two main methods—" acceleration " and " enrichment "—have been advocated and most educational systems show a combination of both. The majority of schools, outside this country, are organised on the basis of a grade system. This means that in the primary school at least, there is a programme of studies, divided into years, through which a child is supposed to progress in step with his age but where passage from year to year is dependent upon his having attained a certain mastery of the previous year's work—as it used to be in the days of " standards " in this country. Thus, a pupil who has not attained an agreed level of mastery as judged by his teacher or by the results of an examination does not pass into the next grade and in fact repeats a year. On the other hand, children who learn markedly faster than their contemporaries can jump grades. In such systems will be found children one, two and even three years behind or in advance of the grade held to be normal for their chronological age. The very able child, then, would be expected to jump classes in his primary school and probably also at the secondary stage.

This process of *acceleration* is open to several disadvantages. Terman and others have found that while very able children tended to be accelerated by one or two grades in school, their actual grades and level of attainment fell considerably below what they might have been if their general learning ability had been stretched to its fullest extent. In American schools, at the time Terman was making his studies, it seems probable that proportionately more children were accelerated than in European schools, where few systems have more than two or three per cent. of children in grade more than a year in advance of their chronological age. Some of this " retardation " of the very able is due to the nature of the curriculum itself. Where a school system has a prescribed curriculum, certain parts of it are taught in a given year and not in another. The child who skips a class, however able he may be, may well encounter difficulties which he cannot surmount unaided. Thus, in the absence of some special arrangement whereby grade acceleration is matched by measures to help the bright child to pass through the intervening work more rapidly, there is a limit to acceleration.

A more serious difficulty is that, while the bright child may in all the intellectual fields covered by the school curriculum be capable of work three or four or even more years in advance of his chronological age, physically, biologically, emotionally and socially, though he may be somewhat in advance, he is unlikely to be on a par with his intellectual equals who are three or four years chronologically older than he. Thus, a policy of

acceleration for the very able, fully applied, would put the bright pre-adolescent in a class with adolescents who in every respect but school learning, were living in an entirely different emotional world.

Acceleration at the Secondary and University levels

However, where acceleration is used with a group large enough to justify special arrangements and special treatment, the evidence suggests that it may prove very successful indeed. Under the auspices of the Fund for the Advancement of Education, a series of experiments in curricula and method were undertaken in American High Schools aimed to enrich and accelerate the curriculum for able students so that they could enter college two years in advance of the normal age. In all, some 1,300 students were concerned, entering twelve colleges. Academically, the early entrants outperformed their class as a whole and the comparison group of students of normal age. They encountered somewhat more difficulty in adjusting themselves to college life than the older students with whom they were compared but most of these difficulties were minor and easily overcome. There was evidence that, in many cases, early admission to college freed the students from the boredom and frustration of an unchallenging school environment, gave them new intellectual momentum and enhanced their social and emotional maturation.

Enrichment

An alternative or auxiliary to acceleration, is *enrichment*. In essence this is what is done when classes in our primary schools are streamed or grouped by ability. Having an age promotion system the English primary school cannot in fact accelerate bright pupils. But it is possible to carry bright children further in such basic subjects as mathematics, reading and the mother tongue, and to bring into the general educational experience, much material for which slower learning children would not have time. It is certainly easier to do this, if all the ablest children are gathered together into one class or, in schools where this is not possible, if they are put into a separate set for the basic educational skills and at other times allowed to go ahead at their own rate. Elsewhere in this journal and in a previous number, such evidence as we have of the educational effects of streaming, is summarised. It seems likely that, if it is properly used, streaming does allow a programme which can stretch the learning capacity of the bright child to the full and prevent him from becoming bored. Grouping the ablest together is likely to increase the intellectual stimulation they give each other and, at the same time, the very outstanding may find a reasonably congenial atmosphere. On the other hand, there may be a disadvantage of a general kind in that the other classes feel their inferiority and that teacher and taught alike miss the stimulus which bright children can give. Perhaps most important, though usually overlooked, is the lesson which bright children segregated into "A" streams in primary schools and intensively coached to pass the eleven-plus may draw from their situation—that the possession of high ability for school work is a personal asset to be exploited for personal ends and carrying with it only the obligation to cover one's superiority with a decent modesty.

Some recent work in Sweden carried out by Husen and Svensson tends to suggest that the " streaming " of the most able is differential in its effects according to the social

environment from which the able children come. They sum up their results as follows: "Children from culturally less privileged homes responded most strongly to selective academic type teaching. Children from homes of higher status apparently are receiving full intellectual stimulation outside the school." Under most conditions, selective streaming, except perhaps for the small proportion of children whose educational difficulties are considerable, is not an essential expedient. It is usually possible in the primary school to have sets within the class for the essential instruction and to make up groups, either cross-sectional, or homogeneous, according to the circumstances, in which the very able child's possibilities of collaborative leadership, of learning how to make a contribution which no one else can make and generally of working with all manner of men and accepting their differences can be brought out.

Selected Secondary Education

At the secondary stage, the problem is less tractable and some broad segregation is probably unavoidable. In this country this means that some fifteen to twenty per cent. of children are educated together in academic schools—themselves very often streamed—and the rest in comprehensive, secondary modern, bi-lateral or technical and commercial schools. It has been suggested by one prominent educationist that we should educate only the ablest five per cent. in schools specially set aside for the purpose and that the rest should pursue their secondary education either in comprehensive schools or in a somewhat less selective form of our present secondary school system. Some of the independent and direct grant schools do tend in fact—partly by their social constitution and partly by the rigorous selection for entry—to educate mainly the ablest five per cent. or less of the age-group. Schools like Winchester, Manchester Grammar School and King Edward's School, Birmingham, probably do not have many pupils who would fall outside the top five per cent. of their age-group on any intellectual criterion and up and down the country there are others of a similar kind. Within the large grammar schools, too, considerable use is made of streaming so that, roughly at all events, the top streams have the abler pupils and very often such pupils pursue accelerated courses that bring them to public examinations somewhat earlier than their contemporaries and allow a longer period in the sixth form where a wider choice of subject and more individual attention are possible.

This system is the envy of those American educators who point to the undifferentiated nature of their own system and the frustration or bad habits it may mean for the ablest. By and large it is similar to the system in use in most countries of continental Europe and stems from a long tradition in which aristocratic traditions mingle with the social purpose of educating the ablest children irrespective of their origins. However, there may be certain considerable defects. There is no certainty that the very ablest children—the one or two in a hundred thousand—will in fact find a school which will challenge them to the full and which will provide them with that companionship which they so sorely need. For many more the increasing competition for university entry means that as their education progresses in the grammar school it becomes more and more limited to a small number of subjects which have to be studied with a particular series of examination requirements in view. Finally, while the good grammar school is not unaware of the

social development of its pupils, of their emotional and social growth and of the way in which the school influences the structure and content of the values with which they face the world, few indeed consciously and deliberately train the intellectual *elite* which they have for the kind of leadership which society needs.

Conclusion

So rapid a survey as the present can do little except draw attention to the gaps in our knowledge and to the numerous problems which seem to call for research and experiment. By and large, our process for the identification of high ability of the kind necessary to success in our educational system and in general in many—but not all—the walks of life probably works efficiently in one direction. We do seem to find and educate enough bright children and adolescents to fill the places in our grammar schools and universities. On the other hand, very little is known of the kinds of negative selection that go on, about the proportions and kinds of children who are eliminated at various stages either because their forms of thinking are not appropriate to the education they are given or because they fall behind at one stage of their growth and do not catch up again. It is worth noting here that errors in selection, however small they may be, are likely to accumulate since only those selected by one process go on to the next. Hence the continuous guidance of children is of primary importance.

The second group of problems and one which has scarcely been touched by research is the identification and education of special talents; there may be few or no "mute inglorious Miltons," but it is by no means so sure that mechanical inventiveness or the combination of practical sense with a feeling for mass, form and line which underly architecture, always make their way unaided; and there may be brushless and inglorious Rembrandts.

High ability is not enough to meet the needs of a growing community. In all walks of life what is needed more than anything else is trained creativeness; and we are far from having solved the problem of how we may at once hand on the immense accumulation of human experience which is the material of education and stimulate pupils and students to think constructively about it, finding new solutions to the new problems with which they are faced.

Finally, there is the whole problem of the constructive education of the ablest group so that they may see their gifts as a trust and as an obligation to service. This is, indeed, the core of the whole question.

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Guidance Techniques:

INTERVIEWS

by Frank Barr

Introduction

PERHAPS interviews are the most commonly used method by which candidates are selected for or guided into careers and courses of education. In addition they are employed by research workers to gain information on a number of social and educational problems. Often much is based upon conclusions drawn from them and reasons for their popularity are not hard to find.

Compared with developing and using other techniques such as questionnaires and standardised tests, they are less demanding of resources of time and money. Other advantages are also claimed for this device. When used for selection or guidance, interviewees whose hopes are not entirely fulfilled are, it is said, more likely to accept adverse decisions when reached through personal contact with an interviewer than through the impersonal agency of test scores. In addition, both selectors and research workers consider that an interview allows them to gain an insight into, for example, a student's home background as well as giving opportunity for closer and more detailed questioning than is possible with other methods.

Its use is so common and firmly accepted that it is pertinent to consider critically the degree and extent of credence which can be placed upon conclusions drawn from an interview. At the same time it may be worthwhile to look at some factors briefly which limit its value and some suggestions which have been made for overcoming them. As a preliminary step it will be useful to crystallize some conclusions drawn from research data around two major criteria: reliability and validity.

Reliability of Interviews

Assessments of an individual's physical, psychological and social traits derived from an interview may be considered reliable if a closely similar result be obtained upon a re-interview under closely similar conditions. Expressed in numerical terms, as a coefficient of correlation, complete agreement of assessments from the two interviews would be represented by 1.0 whilst a total lack of agreement should be indicated by 0.0.

Measures of general ability such as standardized tests used in secondary selection, tend to have reliability coefficients as high as 0.98. This means that two administrations of the same test after a time interval of about three months have a very high level of concordance.

Intelligence tests, however, measure one relatively stable factor whereas in an interview we are attempting to assess a complex and probably varying series of aspects of personality such as interests, motivation and acceptability to others. It would, therefore, be unreasonable to demand a similarly very high reliability coefficient from an interview designed to measure several factors, some of which tend to fluctuate within wide limits. Accordingly, experienced workers like Vernon consider that lower coefficients are acceptable in assessing personality than in abilities. Between .50 and .70 he accepts

as being low but passable; .70 and above as satisfactory; and .85 and above as being rather suspiciously high unless obtained from very carefully controlled situations.

Vernon cites several examples of interview reliability. In one, Hollingworth studied 12 Sales Managers who each interviewed independently 57 applicants ranking them for their suitability for posts. There was such variability in the different interviewers' assessments that each applicant received a ranking which ranged almost from the top to the bottom of the list. Another study, by Hartog and Rhodes, found that the coefficient of reliability between two Civil Service Board interviewing the same candidates was only .41.

Many other studies are similarly reviewed by Vernon who found them, in general, to give coefficients of between .50 and .60. He expresses this as being equivalent to a situation where two interviewers working independently interviewed 100 candidates each being asked to pick the best 20. With the above level of reliability they would agree on 9 candidates only, disagreeing on the remaining 11. This general conclusion is supported by Bingham and Moore.

Validity of Interviews

An interview's *validity* may be determined when its conclusions—for example, about a candidate's suitability for a course of education—are measured against some external criterion such as the results of an external examination.

Before the Second World War, McClelland, in a " follow up " study of secondary school selection in Scotland, found that primary school Headmasters' assessments made in interviews did not reduce later failure rates. After considerable personal experience and a careful study of many reports of selection in the Armed Forces during the war, Vernon and Parry also came to the conclusion that interviews were poorer than standardised tests as predictors of success. Later, Himmelweit compared interview assessments of students admitted to the London School of Economics with their degree marks and found a very low validity, whereas a short entrance examination gave a positive prediction and a battery of aptitude tests proved to be of even greater value.

As with reliability, however, it is unreasonable to compare the best of one type of measuring instrument with the worst of another. In addition, validity levels will be lower when applicants who are accepted on the basis of an interview are ' followed up,' as they are already a highly selected group. However, even with these reservations the overwhelming conclusion must be drawn that interviews are relatively unreliable and of low validity.

Research into methods of improving interviews

Despite grave disadvantages, Vernon and Parry consider that the interview still has a prime role to play and accordingly advocate further attempts to improve it. A considerable amount of work has been undertaken which appears to centre on four main problems.

The first concerns the degree of standardisation which is desirable in the interview situation. For example, should the situation be carefully structured so that conditions between one interview and another are as closely similar as possible, or should each interview be allowed to take a course guided solely by the interviewee? British practice

appears to prefer a middle course whereby the main questions are determined beforehand but a wide latitude is left as to when they are presented and how the leads which they may give should be followed.

Secondly, there is, of course, the problem of subjective bias on the part of the interviewer and the quite understandable tendency of candidates to give what they consider to be " acceptable " answers for the occasion. One example often quoted of the first aspect is reported by an American psychologist, Rice, who studied the conclusions of two interviewers trying to find reasons for the destitution of applicants for financial aid. One, of strong political views, attributed 39 per cent. of cases to industrial conditions and 22 per cent. to over-spending on alcohol; the other, an advocate of temperance, allocated 7 per cent. and 62 per cent. to these categories respectively. This problem can never be entirely overcome but may be alleviated by taking other more objective measures into account. At the same time these may also be useful to measure the veracity of interviewees' replies.

The third problem poses two main questions: what kind of information should interviewers seek, and how should it be measured? Charters points out that as with other techniques, interviews only sample behaviour. Accordingly, whilst it is possible to assess factors such as appearance, manners and agreeableness, great caution should be exercised about inferring too much either about these traits in other situations or about other traits not brought into play in the actual interview. In general, it appears to be rather pointless to seek facts which can be obtained more readily from a questionnaire or test, except when corroboration is needed. Most reports encourage interviewers to limit the scope of questioning to discover the interviewees' attitudes to relevant problems.

A considerable literature has been written about the second aspect. One favourite device is a Rating Scale although Bingham and Moore consider its main disadvantage to be its superficial appearance of objectivity and stress that it is a relatively crude means of grading replies. However, as Guilford points out, a well-constructed and intelligently-used scale can be of considerable help to interviewers.

Finally, nearly all the research reports which have been reviewed indicate that the essential problem can only be tackled by a careful selection and training of interviewers themselves. Here Festinger and Katz list three main objectives of a training programme: to clarify the purpose of interviewing; to impart specific skills and techniques; and to give the interviewer a sense of purpose and understanding of the value of his work.

Whilst all three are clearly of great importance the reports generally place especial emphasis upon the last objective. There appears to be widespread agreement that the key to a successful interview, either for guidance or research, is the understanding and sympathy with which the interviewer approaches the interviewee.

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Research Note:

PREFERENCES AND VALUES AMONG ADOLESCENT BOYS AND GIRLS

by C. M. Fleming, D. F. Digaria and H. G. R. Newth
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CONSIDERABLE interest attaches to the study of the attitudes, values and preferences of boys and girls as they pass from childhood through adolescence to adult status. Much has been written on the topic; but there are relatively few records which trace actual changes in the viewpoint of children as they grow. This may be attempted either through long-term follow-up studies of groups of young people over a period of years, or through cross-sectional records of the reaction of adolescents of comparable education and similar social settings on a given date. Both methods require, however, something of the nature of standardised test material suitable for the assessment of personality in the field of adolescent interests and values. They require also the active co-operation of teachers, club-leaders and parents along with willingness on the part of boys and girls to engage in self-observation and to admit their preferences as to occupations, expenditure of money, relationship to other people, ambitions, and the like.

These conditions appear to have been fulfilled in three investigations whose findings have recently become available. The personality test used in all three was one which permitted the subjects to indicate by voting their approval of or agreement with selected opinions and descriptions of situations in schools or clubs. (Give 4 votes to those statements with which you agree very strongly, 3 to those which you think the next most sensible ones, and 2 to those about which you are doubtful. Give 1 to those with which you agree least and 0 to those with which you do not agree at all.)

Using One's Hands

Making things with one's hands is the most satisfying of all occupations .....

Being with Other People

I am happiest when with other people .. ..
Working in a team irritates me .. ..

Talking about School

Going to school is a waste of time .. ..
Most boys and girls who leave school wish they were back .. ..

For the Christmas Play

Joe said he would fit up the electric lights .. ..
Jessie offered to watch the words and help those who forgot their parts .....
Sam said he was willing to take part in the play .. ..
Beth said she would write an account of it for the newspapers .. ..

In the Club

Jean said she would like to learn to play in a band .. ..
Bob said he wanted to learn about politics and government .. ..

The items of the test had been chosen to give a representative assessment of the preferences and values of boys and girls in the three fields of interest in things (collecting things, handling things, or making things); in people (studying people, being with people or managing people); and ideas (finding things out, thinking things through and/or designing experiments).

I. An Enquiry into the Preferences and Attitudes of a Group of Girls at ages Thirteen and Sixteen

Through the courtesy of the headmistress of a girls' grammar school and with the co-operation of the staff a very thorough study was made involving teachers' ratings on personality, pupils' opinions of themselves and pupils' responses to a standardized personality assessment. Ninety girls were tested at the average age of thirteen years and the test was repeated three years later with the same pupils.

Average preference scores are shown below (along with their standard deviation).

Age	Things	People	Ideas
13	54.78 S.D.8.43	59.11 S.D.9.53	42.50 S.D.9.2
16	50.22 S.D.9.81	60.78 S.D.10.74	50.17 S.D.8.18

An interest in people remained relatively stable in the group as a whole over the three years while preferences for things decreased and activities concerned with ideas came to be valued more highly. Test-retest correlations over the three years expressed the same pattern in a different fashion (for people +0.66, for things +0.44 and for ideas +0.37); and inter-correlations between the types of preference were indicative of independence among these values.

Age		Things	People
13	People	—0.37	
	Ideas	—0.31	—0.31
16	People	—0.48	
	Ideas	+0.22	—0.45

II. Long-Term Studies of Two Groups of Boys

Sixty-four boys in Form II of a grammar school were tested each year for four consecutive years with the same objective test of adolescent preferences—and another fifty boys who entered the school a year later were similarly followed up for five years.

In the first group the boys' expressed interest in people did not differ significantly over the four years from their initial average vote of 46.0 (S.D. 9.5) while a similar stability at a lower level was recorded for ideas (41.5 S.D. 9.5 at the first testing and 40.5 S.D. 9.0 on the fourth occasion). In contrast to this, their preference for things showed a significant decrease (from 51.25 S.D. 8.75 on the first testing to 44.6 S.D. 11.5 on the last testing).

In the second group, the boys' preference for things showed a steady and significant decline of rather more than eleven points of interest score over the five year period with, again, an absence of significant differences in the interest scores for people (from 51.0 S.D. 7.5 on the first testing to 48.1 S.D. 8.0 on the fifth occasion) or for ideas (from 45.8 S.D. 9.5 on the first testing to 43.1 S.D. 9.5 on the last testing).

Test-retest correlations over the years were from the first to the fourth testing in the first group, +0.45 (things), +0.32 (people), +0.58 (ideas); and from the first testing to the fifth testing in the second group, +0.58 (things), +0.38 (people), +0.58 (ideas).

Inter-correlation among the types of preferences again showed the relative independence of an interest in things, a concern with people and an emphasis on ideas.

Interval		Things	People
Four years	People Ideas	+0.11 —0.11	+0.12
Five years	People Ideas	—0.03 +0.30	+0.05

III. A Cross-Sectional Study of Boys and Girls

Five hundred boys and girls from secondary modern schools in the neighbourhood of the boys' grammar school were also examined with the same personality assessment (P.A.I.). This provided data from fifty boys and fifty girls in each form from I to V in age-groups of average ages ranging from $12\frac{1}{12}$ to $16\frac{2}{12}$ (boys) and from $12\frac{2}{12}$ to $16\frac{9}{12}$ (girls).

In this cross-sectional study there was for both the boys and the girls an absence of significant differences over the five years in expressed interest either in people or in ideas. This was coupled with a significant decrease in their preferences for things—the decline being for boys from an average vote of 58.2 S.D. 10.25 in the first form to 53.2 S.D. 10.2 in the fifth and for girls from 45.4 S.D. 11.25 in the first year to 40.9 S.D. 11.5 in the fifth.

To a greater extent than was anticipated there was thus a similarity in the interest pattern of both boys and girls, grammar school pupils and pupils from secondary modern

schools. While an interest in things was high in all groups in the early stages of secondary schooling and while girls on the whole showed higher relative interest in people in contrast to the boys' more frequent expression of greater preference for things, these differences were not consistently significant, when similar age groups were compared.

In subsidiary enquiries, a factorial analysis of the grammar school boys' preference scores, their school examination marks in English, French, Mathematics and Science and their intelligence test scores indicated that the test on Preferences and Values was measuring something other than, and supplementary to, these appraisals of special attainments and general mental ability; and the pattern of factorial analysis for the girls was roughly comparable to that of the boys. Both the stability and the variations so indicated have been confirmed by other studies of boys and girls from grammar schools, from technical, commercial and art schools, and from secondary modern schools in other districts. Boys and girls in all types of school share an interest in things, in people and in ideas. The differences between groups are not consistently significant and the variations of pattern cannot be predicted from a knowledge of sex, age or educational classification.

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Research Note:

The Effects of Streaming: A Further Contribution

by W. G. A. Rudd

PRACTISING teachers and other educationists may have been unduly depressed at the possible outcome of any such research by the negative findings reported in the earlier note in this series by Yates and Pidgeon. However, there is research which has given leads to some key issues for investigation which might well yield more positive results.

The object of any form of streaming or grouping is to place each pupil in that educational setting which will give him the best opportunity to achieve optimum, well-rounded growth. Yates and Pidgeon, accordingly, rightly draw attention to certain assumptions about child development which underlie the practice of streaming; and the present article cites some evidence of research known to the writer which is relevant to these assumptions.

1. Does streaming substantially reduce the range of abilities within a class?

In the main, both primary and secondary school teachers believe that a coarse grouping of pupils into two or three categories is a feasible procedure. If pressed, many will justify this belief by stating that streaming substantially reduces the range of abilities to be found within any one class.

Any research seeking evidence to justify such a belief would consider separately, of course, the range of abilities in the criterion on which streaming is based and in other criteria of educational significance. Evidence already available tends to refute this assumption made by teachers. For example, West reported in 1933 that the variation in achievement of ability groups in grades having three homogeneous levels was about eighty-three per cent. as great as the variation in unselected groups, and in grades having two such levels the comparable variation was ninety-three per cent. In 1948 Cook stated that under the most favourable circumstances, that is when pupils are divided into three " homogeneous " groups on the basis of an achievement test battery heavily weighted in favour of reading and arithmetic scores, a reduction of about twenty per cent. in reading and arithmetic variety may be expected. In other subjects such as art, music and hand writing, the reduction of range approaches zero. In the face of such evidence he recommended that, when grouping is practised, it should be on the basis of status and needs in specific learning areas; that is, pupils should be grouped differently in each subject area. Such groups should be flexible in organisation and specific purpose. Recently, Ramey, following an investigation of ability grouping in the junior high school, has reported almost complete overlaping from one group to another. He also stated that the teachers involved tended to generalise and teach according to their perceptions of the homogeneity of the group, neglecting the wide ranges inherent in any group.

The above studies were all carried out in U.S.A. Evidence of the reduction of range of abilities achieved in British schools having different numbers of streams would be very valuable in testing the validity of the assumption.

2. Can teachers deal more effectively with relatively homogeneous groups than with those comprising pupils manifesting markedly different educational needs?

In this issue much turns on the degree of homogeneity achieved within the groups under examination. In addition, however, it is necessary to consider the teaching methods in use, and in particular, the scale of provision for individual differences. Perhaps the best evidence already available is that of Jones, who contrasted, as follows, fourth grade classrooms where varying degrees of provision for individual differences were made:

(*a*) The experimental groups adapted instruction in skills to each individual's level of achievement and capacity, having no regard to his grade placement. The text and workbook material used was on levels from second to sixth grade. The practice was to use single copies or small sets of books rather than large sets of basic material. The adaptation to individual differences called for grouping within the classroom, varied procedures and careful record keeping. This was true of the content subjects as well as in the English and arithmetic skills measured in the study.

(*b*) The control groups used materials showing a closer adherence to basic fourth grade texts. Any variety which did exist was planned with emphasis on supplementary material rather than on adaptation to individual differences. The most common procedure was to work with the class as a unit and to direct the same instruction to all, seeking to strike the average.

Jones found that during the eight months of her study, significantly more growth in mastery of the basic skills was made by pupils of the experimental group than by those of the control group. She was convinced that a difference in point of view which permeated the two types of classroom was an important factor in influencing the results of the study.

Here again, British schools of different sizes and with basically different organisations could provide valuable evidence of the scale of provision for individual differences which is practicable, and of the effects of such provision measured in terms of pupil growth.

3. Over a period of three or four years, in either the primary or the secondary school, do the relative levels of performance of children remain fairly stable?

An investigation aiming to answer this question involves either long-term growth studies or regular testing of children in sufficiently large numbers to offset differences due to such uncontrolled factors as teacher efficiency and socio-economic level. The evidence of growth studies already available, such as that of Dearborn, suggests that variability in rate of growth is an important feature of child development. Owing to the practice, widespread in the U.S.A., of not promoting pupils who have failed a grade, available evidence of the long-term performance of ability groups is only partially relevant to British conditions. Typical of such evidence, however, is the work of Coffield and Blommers

whose subjects were pupils who annually took the *Iowa Basic Skills* Tests, and included some who had experienced failure once between grades two and seven. On the basis of tests given during the year of the seventh grade these researchers concluded that the variety of abilities within such a class was not effected by the rigidity or leniency of its promotion policy.

On this issue valuable evidence could result from a close study of the changes, over a period of three or four years, in the range of abilities within groups classified on entry by different criteria.

4. Does regrouping between streams lead to more rapid (or more steady) development among pupils?

Whether regrouping leads to the transfer of large numbers of pupils or only of individuals, this question involves the dynamics of group membership. It has been shown by the present writer that transfers of individual pupils between streams are followed by behaviour disorders, no doubt attributable to the emotional tensions resulting from transfer. Other findings bearing on the question of introducing individuals into pre-existing classroom groups include:

(*a*) Sandin. He found that in general, though not without exception, slow progress pupils were less favourably adjusted socially in their class groups than were their class-mates; that they exhibited undesirable behaviour and attitudes; and that non-promotion of individual pupils impeded good social relations between them and the more regularly-promoted pupils.

(*b*) Goodlad. He concluded that peer group relationships were happier in regularly-promoted groups than among those whose progress was retarded. (The pattern of differences discriminated consistently neither between the groups nor between individuals).

(*c*) Buswell. He found that in general, though with exceptions, pupils who are succeeding in their school work will also be succeeding in their social relationships with their peers.

Once more research could provide further valuable information about the social and emotional relationships among pupils who are grouped on the basis of different criteria. The value of any such research would be greatly increased if it included also data on the achievement levels of the same pupils.

The questions listed in this article do not, of course, represent a total of all the issues involved in the practice of streaming. The aim has rather been to draw attention to some existing evidence relevant to certain widely-held assumptions about streaming. Such evidence is far from complete; and that reported may well run counter to the beliefs of readers. If, for either reason, this article stimulates further research in this field, the author's purpose will have been achieved.

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Bibliography:

THE TEACHING OF ENGLISH IN SECONDARY SCHOOLS

SHEILA BATE, N.F.E.R.

A BIBLIOGRAPHY on such a subject is necessarily not comprehensive, since its boundaries are not definable. However, some attempt has been made to record most of the major publications generally acknowledged as important to the teaching of English in the last thirty years. It was felt that a historical perspective was necessary in a subject as liable to changes of emphasis as English in the schools has been. In addition there are some references to modern works and surveys, such as those in the field of Teaching Aids, which may be practically useful to English teachers.

Language has been emphasised rather than literature, in order to keep the list within bounds, but as it is impossible to separate the two entirely, many references to the teaching of literature are included under general headings.

Although a rough grouping has been made there is no hard and fast division between the sections.

(*=more advanced reading)

GENERAL SURVEYS

The Teaching of English in England. BOARD OF EDUCATION. H.M.S.O. 1921.

A comprehensive report which deals with English teaching at all levels. It stresses the importance of English literature in a national education.

Report of the Consultative Committee on the Education of the Adolescent (Hadow Report). H.M.S.O. 1926.

This is a generally relevant report which devotes a few pages specifically to the teaching of English. It stresses speech training and the importance of literature as an interpretation of life.

Spens Report on Secondary Education. H.M.S.O. 1938.

There are three main objectives:

(i) Communication in speech and writing.
(ii) The use of the power thus acquired to develop the child as a citizen.
(iii) A cautious statement of the importance of literature as a heritage, along with the admission that literature can perhaps not be taught.

Language: some suggestions. MINISTRY OF EDUCATION. 1954.

A general survey of native language teaching in schools, of which the introductory chapters, the chapter on composition in secondary schools and the two chapters on Language of Imagination are particularly relevant for a general perspective of the field.

The Teaching of English. I. A. GORDON. New Zealand Council for Educational Research. 1947.

This book is based partly on previous authority and partly on discussions with workers in all types of secondary school. It is liberal but not extreme. Gordon emphasises the responsibility of an English teacher in training children to write and understand clear plain prose of various types.

A Critical Survey of Objective Estimates in the Teaching of English. DOROTHY BAGLEY *British Journal of Educational Psychology*, 1937. Parts I and II.

Part I is a report on the objective surveys and experimental research up to 1937 in the fields of reading, comprehension and the teaching of literature and appreciation. Part II contains a discussion of the best method in teaching spelling, a statement of the most common grammatical errors and a discussion of the timing in introducing grammatical ideas. She gives an account of a survey of children's composition preferences and a summary of the research in this field. There is a summary of work on the rating of compositions and a discussion of the principles of the psychology of learning as applied to English.

The Teaching of English. INCORPORATED ASSOCIATION OF ASSISTANT MASTERS IN SECONDARY SCHOOLS. Cambridge University Press. 1952.

This book is the work of a committee of teachers. All aspects of English teaching are discussed, including such controversial topics as oral work, visual aids and examinations in English. Examples of VIth Form syllabuses are included, to meet the needs of both arts and science sixth forms.

Memorandum on the Teaching of English. ASSOCIATION OF ASSISTANT MISTRESSES IN SECONDARY SCHOOLS. University of London Press. 1956.

This is a report by a working party of Grammar School teachers. It is useful particularly for its suggestions on the timing of different aspects of the subject and it contains three schemes of work for three different types of secondary school.

Teaching and Testing English. BALLARD, P. B. University of London Press. 1939.

This is a sequel to Ballard's 1921 book. Amongst other things he stresses oral English. He does not think literature is capable of being taught; written work should be specific in topic and audience and should be planned. There are chapters on objective-type items in English tests.

The Language and Mental Development of Children. A. J. WATTS. Harrap. 1944.

Watts deals with almost every aspect of expression, including reading, the understanding of character, metaphor and analogy and the language of feeling. He insists that education must be a leisurely process; increased linguistic power can only come about gradually through increased insight and maturity. Teachers must, therefore, have a thorough understanding of what types of activity are likely to interest children of different ages. Much more research is needed in this field. There is a useful appendix on the aims and methods of educational research and a considerable amount of test material for age levels 6-15 is attached.

English in Education. H. BLAMIRES. G. Bles. 1951.

This is a general work in which the writer makes many cautionary observations. He warns against mixing aesthetic experience with linguistic analysis and against the too premature teaching of literary criticism. He emphasises motivation in written work.

The Teaching of English. Studies in Communication, No. 3. Contributed to the Communication Research Centre, University College, London. Edited by Randolph Quirk. Secker and Warburg. 1959.

This consists of a series of articles by different specialists on different aspects of English teaching. There are chapters on the structure of the language, style, speech education, teaching English to scientists and teaching English as a foreign language.

English in the Modern School. A. E. SMITH. Methuen. 1954.

Smith emphasises speech fluency and clarity, reading for interest, and clarity as the primary aim in written work. There are many practical suggestions and useful book-lists of fiction and non-fiction works for the classes as well as many suggestions of books for teachers.

The Teaching of English in Schools. A symposium edited for the English Association by V. de Sola Pinto. Macmillan. 1946.

This very comprehensive book contains articles on the teaching of poetry, drama, choral speaking, spoken English, grammar, prose, composition, reading, examinations, the school library and teacher training.

English in Education. Supplement in the *Journal of Education*. Vol. 89. 1957.

This includes articles on English in the World Today, English in Schools, Early Steps in English, Reading and Writing in Secondary Schools, Examinations in English, Part-Time English and English as a Specialist Discipline.

Language in School. M. M. Lewis. University of London Press. 1942.

This sets out three main uses of language:

(i) As communication.
(ii) As an expression of emotion.
(iii) As a means of influencing others.

This book stresses the necessity for training children in the use of speech in everyday situations in writing for practical purposes, such as letter-writing.

THE TEACHING OF GRAMMAR

Teaching the Mother Tongue. P. B. Ballard. University of London Press. 1921.

Though old, this book is a classic on the teaching of grammar. Ballard is sceptical about the indiscriminate teaching of parsing and analysis, and suggests that more experimental research is needed before categorical decisions are made. There is much historical background to the grammar controversy: he makes a plea for rhetoric, the science of composition, to take the place of grammar in secondary schools.

The Difficulty of Grammar. W. J. Macauley. *British Journal of Educational Psychology*, Vol. XVII, Part I. 1947.

This is a study of grammar in Scottish schools. He found that few primary school pupils could get as many simple items right as wrong after four years' teaching; few junior secondary schools pupils could, and only the best of the senior secondary.

Learning and Teaching English Grammar. Hunter Diack. Chatto & Windus. 1956.

This is the teacher's book to accompany *How Words Work*. Diack attacks Macauley's conclusions and suggests that grammar should again be given a place of importance in the schools. He sees grammar as a structural process—an essential part of the process of clear thinking.

TEACHING METHODS AND THE CURRICULUM

Psychological Studies of the Curriculum and of Class-room Teaching. W. D. Wall, B.A., Ph.D. No. 7 in *Studies in Education* (London Institute of Education). 1955.

This study shows how previous research has emphasised the importance of three main groups of factors:

(i) The emotional and cognitive readiness of the child.
(ii) The social norms to which the child is to become adapted.
(iii) The environment, particularly teacher-pupil relations.

The Play Way. CALDWELL COOK. Heinemann. London. 1917.

Cook believed that the natural means of study in youth is play. He taught boys under fourteen by active methods as far as possible, since he believed that play-activities (such as debating, miming, country-dancing, etc.) which were really enjoyed resulted in learning and social adjustment.

Research and the Basic Curriculum. C. M. FLEMING. University of London Press. 1946.

This is a useful summary of research into the assumptions which have guided educational practice since the beginning of the century. There are useful analyses of the contemporary position in reading, oral expression, written expression, spelling, handwriting and the socialising of the English skills. There are many pointers for further research.

The English Subjects Synthesis. F. C. HAPPOLD. Christophers. 1951.

Happold was assistant master at Perse School in the days of Dr. Rouse. His thesis that the conventional subject divisions should be abandoned and that English, history, geography, civics, etc., should be taught in terms of skills, aesthetics, environment, heritage, etc. He lays stress on the use of projects, especially in secondary modern and technical schools.

English for the English. G. SAMPSON. Cambridge University Press. 1925.

This is an emphatic and controversial book still relevant today. Sampson stresses the importance of humanistic values in English: oral English is not given sufficient place for him. He is responsible for the words " Every teacher is a teacher of English because every teacher is a teacher in English."

English Teaching in the World Today. BRUCE PATTISON. No. 4 in *Studies in Education* (London Institute of Education).

A plea for linguistic analysis and for recognition of the importance of the structural framework in English.

The Teaching of English. BLACKPOOL EDUCATION COMMITTEE.

This consists of detailed suggestions for work programmes in English from Infant school to all types of Secondary school. Based on the principle that every teacher is a teacher of English.

An Experience Curriculum in English. Report of a Commission of the National Council of Teachers of English. Hatfield (Chairman). English Monograph, No. 4. D. Appleton-Century Co., N.Y.

A report advocating the teaching of English from kindergarten upwards in terms of experiences. These should be well-balanced, brought about by techniques taught as 'enabling' objectives, graded and adapted to the capacity of individual learners. It deals with literature, reading for different purposes, creative expression, speech and writing experiences with the aim of communication, and corrective teaching. The book consists largely of practical examples of these objectives in graded form.

***Speculative Instruments.** I. A. RICHARDS. Routledge and Kegan Paul. 1955.

This contains a chapter on the Responsibilities in the teaching of English. He criticises English teaching as planless—there is no agreement as to what should lead to what.

TEACHING AIDS

The Library in General Education. NATIONAL SOCIETY FOR THE STUDY OF EDUCATION. 42nd Year Book, Part II. The University of Chicago Press. 1943.

This book deals with all aspects of library use in schools. American school libraries have greater financial resources but many of the ideas in this book should be of use. Problems of management are discussed and a chapter on visual aids is included.

Audio-Visual Methods in Teaching. EDGAR DALE. The Dryden Press. N.Y. 1946.

This book contains a useful discussion on 'experience' in education and the formation of concepts through experience. There is a great deal of space devoted to different sorts of audio-visual aids such as exhibits, museums, drama, film-strips, etc. One chapter is devoted specifically to the use of such aids in English, literature and reading.

English.

The journal of the English Association contains occasional lists of useful recordings of poetry and drama, with critical comments.

EXAMINATIONS IN ENGLISH

Secondary School Entrance Examinations. WATTS, PIDGEON AND YATES. N.F.E.R. Publication No. 6. Newnes.

This is a general study of the factors influencing scores in objective tests, particularly coaching and practice. There is a brief discussion of the necessity and insufficiency of objective tests in English selection. The report is based on the results of experiments done in more than fifty schools.

The Measurement of Abilities. P. E. VERNON. University of London Press. 1940.

This contains a discussion of the problems which arise in marking English compositions, a discussion of relevant abilities such as reading and reasoning abilities and a list of published tests in every field. The book is also a good introduction to basic educational statistics.

English in the G.C.E. G. G. URWIN. *The Schoolmaster*, October 9th, 1959.

A very concise and practical analysis of the different requirements of the different Examining Boards for 'O' level English Language. Dr. Urwin, who is a Chief Examiner in Language to the London School Examinations, pays particular attention to the implications of the different lengths of the examinations.

English Language at G.C.E., 'O' Level. JAMES BRITTON in *Talks to Teachers of English*. Department of Education, King's College, Newcastle-on-Tyne. 1959.

Mr. Britton stresses the fact that special syllabus papers are available for those schools which ask for them. He concludes that examiners should concentrate on improved ways of setting and marking questions, and on testing the use of continuous language in compositions and comprehensions.

ORAL ENGLISH

The State of Spoken English in Schools. BASIL HARVEY. In *English*, Vol. XI, No. 66, Autumn 1957.

The writer is in favour of more boards following the lead of Durham and the N.U.J.M.B. and initiating 'O' level and even 'A' level examinations in spoken English with the aim of raising speech standards in schools.

The Teaching of Spoken English at the College of Technology, Birmingham. In *Speech and Drama*, July, 1958.

This is a discussion of the methods found to be useful in tackling the problems of communication. It should be relevant to some secondary schools.

THE WRITING AND MARKING OF ENGLISH

The Teaching of Written English. GURREY, P. Longmans. 1954.

This is a scholarly work illustrated by quotations from many authorities. Gurrey gives a detailed procedure for teaching different aspects of written English. He stresses the importance of motivation throughout the book.

The Marking of English Essays. Report of the International Examinations Enquiry. Hartog—Chairman. Macmillan & Co. 1941.

This report discusses the usefulness of various marking categories, the ambiguity of the concept of literacy, the need for training in summarising and the need for testing the self-consistency of examiners and general consistency between examiners in Public Examinations.

Free Writing. DORA PYM. University of Bristol Institute of Education, No. 10. University of London Press. 1956.

An informal account of experiments in free writing done with children aged 7-14 approx. The material used is derived from the selection examinations made for Wiltshire by the Bristol Institute. Copious examples are given. A discussion of the problems raised by these experiments by Dora Southwell.

The Film and Composition. W. F. LINDSAY. The Scottish Educational Film Association, Research Publication No. 4. 1949.

This deals with experiments done on Primary School children aged 10-12. The experiment took the form of assessing the effect of a film on composition by asking the classes to write a composition on, say, A Day in the Life of a Postman, one having seen a relevant film and the other not. A valuable appendix on the marking of English compositions is added.

Words in Action. SIR PHILIP HARTOG. University of London Press. 1947.

This is a comprehensive work on written speech discussed from many points of view, and well-illustrated with shrewd examples from Hartog's experiments in teaching. He includes sketches of the history and practice of native language teaching in several countries, and selects France's methods as worth further study.

A New Method of Marking English Compositions. R. MORRISON AND P. E. VERNON. *British Journal of Educational Psychology*, Vol. XI, Part 2. June 1941.

This is an empirical assessment of Steel and Talman's method of marking, which emphasises three features: (*a*) Vocabulary and idiom; (*b*) Sentence structure; and (*c*) Sentence linkings. The findings are that this is an unsatisfactory method because aesthetic qualities are not included. The method guarantees a reasonable assessment of grammatical qualities.

Experimental Enquiries into the Use of Essay Type English Papers. D. A. PIDGEON AND A. YATES. *British Journal of Educational Psychology*, Vol. XXVII, Part 1. 1957.

Essay-type English papers were administered to several groups of 11 year old children in an attempt to determine the reliability and validity of this type of examination. Many findings emerged, of which the most important are the evidence for idiosyncrasies and lack of consistency among children and examiners, and the conclusion that 'old type' essay examinations are less satisfactory than objective tests in forecasting secondary school success.

***Rhetoric and English Composition.** H. J. GRIERSON. 1944.

This is an erudite work lavishly illustrated with examples from literary works. He analyses the styles and techniques of many writers. Using the phraseology of rhetoric he says much that is current in more recent works: for example he emphasises the importance of structure in English and of specific and adequate motivation in writing.

READING AND READABILITY

Vocabulary of the Secondary Modern School Child. D. G. BURNS. Occasional Publication No. 1, N.F.E.R. Newnes. 1960.

This is described as an empirical study of the words known by senior pupils in secondary modern schools. It incorporates a list of words each graded according to difficulty for boys and for girls. The level of difficulty is represented for each word by the score out of a hundred of children in their third year at twenty secondary modern schools. It provides a simple method of estimating difficulties due to vocabulary.

A New Readability Yardstick. FLESCH, R. *Journal of Applied Psychology*, 32, 221-33. 1948.

This is a revision of Flesch's early readability formula, now modified to cover sentence length and word length in one scale and personal references in another. The resultant score should give an indication of the level of difficulty of the passage. The formula is empirically derived from an analysis of reading ability of American schoolchildren.

What Do Boys and Girls Read? A. J. JENKINSON. Methuen. 1940.

This is a survey by questionnaire method of the free time reading habits of almost 3,000 children in the old senior and secondary schools. Jenkinson's thesis is that literature classes, if held at all in the middle forms, should be based in the interests of the children (school, adventure, home life stories, etc.) rather than on standards imposed by tradition.

Reading in the High School and College. NATIONAL SOCIETY FOR THE STUDY OF EDUCATION. 47th Year Book, Part II. The University of Chicago Press. 1948.

Chapters on all aspects of reading are included, each one written by an expert in the field. Among the aspects relevant to secondary schools are the scholastic and therapeutic implications of reading studies.

The Teaching of Reading and Writing. W. S. GRAY. U.N.E.S.C.O. Monographs on Fundamental Education, No. X. 1956.

This report is based on two years' work into methods of teaching reading and writing. It discusses such topics as the necessary attitudes and skills for efficient reading and the nature of reading programmes for adults, but the emphasis is on teaching reading and writing to those who are not able to do either.

The Reading Interest and Habits of Adults. W. S. GRAY AND R. MUNROE. Macmillan. N.Y. 1930.

This book consists of:

(i) A summary of investigations amongst American children and adults showing what sort of material they read and why.
(ii) Case studies of individuals.
(iii) A discussion of the implications of his findings.

Reading, Film and Radio Tastes of High School Boys and Girls. W. J. SCOTT. New Zealand Council for Educational Research. 1947.

This is a survey, lasting four years, into the tastes of nearly 4,000 boys and girls. A copy of the questionnaire used is enclosed. Scott offers practical suggestions based on the result.

The Uses of Literacy. RICHARD HOGGART. A Pelican Book, first published by Chatto & Windus. 1957.

This book is an analysis of the working class way of life, with particular reference to the sort of magazines and books that working-class people are likely to read. He gives some indications of why they are not likely to take kindly to 'classic' literature.

CRITICISM, APPRECIATION AND COMPREHENSION

***Language in Thought and Action.** S. I. HAYAKAWA. George Allen and Unwin. 1952

A stimulating book on the functions of language in social communication, in art and in the formation of attitudes and concepts. At the end of each chapter are exercises in the practical application of what has been read. Suitable for work at the sixth form level.

***Practical Criticism.** I. A. RICHARDS. Routledge and Kegan Paul. 1929.

This well-known work shows that undergraduates frequently misunderstand what they read and fail to discriminate between sterile writing and writing of high quality. The reason for this may lie in the way they are taught English.

***The Education of the Poetic Spirit.** M. L. HOURD. New Education Book Club. 1949.

A study of children's expression in the English language. This falls into four parts:

(i) Mainly empirical, concerning different kinds of dramatisation from early phantasy to senior play-readings.

(ii) Mainly concerned with the function of imagination in the written work of adolescence; a discussion of syncretic understanding is included.

(iii) A discussion of techniques and the relationship between teacher and child as it affects expression.

(iv) The writer aligns her viewpoint with other psychological theories. The nature of an aesthetic experience is discussed.

The Difficulties of Training College Students in Understanding What They Read. *British Journal of Educational Psychology*, Vol. XXIV, Part 1. 1954.

Black maintains that the results of this enquiry apply also to children between 15-18. His conclusions are based on answers to objective tests. He finds eight main sources of error comprising failure to understand writer's attitude, irony, words which for one reason or another may be difficult, difficult allusions, non-comprehension of the nature of metaphor, lack of background information, failure to note the influence of the context, and preconceptions on the part of the reader.

Thinking to Some Purpose. S. STEBBING. First published 1939. Reprinted as a Pelican Book, 1959.

Clear Thinking. R. W. JEPSON. Longmans. 1954.

Straight and Crooked Thinking. R. H. THOULESS. First published 1930. Revised and enlarged, 1953. Pan Books Ltd.

These books are concerned with logical thinking and with tricks and fallacies in thinking processes. They demonstrate such things as the influence of emotive words, reliance on 'authority' and the use of ambiguous terms.

A new publication:

SPELLING IRREGULARITY AND READING DIFFICULTY IN ENGLISH

by W. R. Lee, M.A., Dr. Phil.,
Institute of Education, University of London

N.F.E.R. Occasional Publication, No. 2

English spelling is frequently looked upon as an important cause of reading difficulty. If spelling were reformed, children would make better progress with their reading, and fewer children would be unable to read for pleasure by the time they left school. This is the view of the Simplified Spelling Society, at whose suggestion this study was undertaken. It is published as No. 2 in the series of Occasional Publications prepared by the N.F.E.R.

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